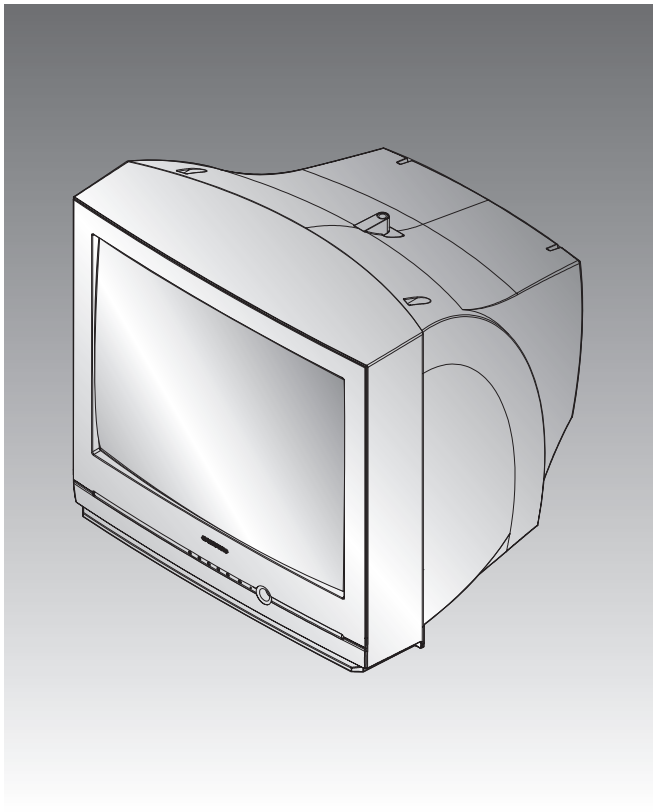
SAMSUNG

COLOR TELEVISION RECEIVER

Chassis : **K15D(N)**
Model : **CT20F3FNT/XAP**

SERVICE Manual

COLOR TELEVISION RECEIVER



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ELECTRONICS

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1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards such as electrical shock and X-rays.

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.

3. Make sure that there are no cabinet openings through which people—particularly children—might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

   If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (Figure 1-1):
   Warning: Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANIS C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

5. With the unit completely reassembled, plug the AC line cord directly into the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

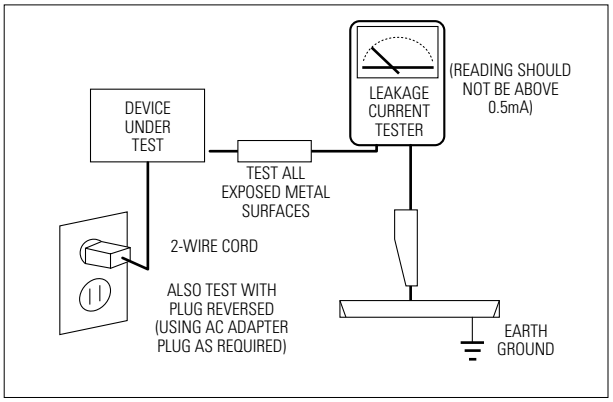

Fig. 1-1 AC Leakage Test

6. Antenna Cold Check:
   With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong. Connect the other lead to the coaxial connector.

7. X-ray Limits:
   The picture tube is especially designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the picture tube only with one that is the same type as the original. Carefully reinstall the picture tube shields and mounting hardware; these also provide X-ray protection.

8. High Voltage Limits:
   High voltage must be measured each time servicing is done on the B+, horizontal deflection or high voltage circuits. Correct operation of the X-ray protection circuits must be reconfirmed whenever they are serviced. (X-ray protection circuits also may be called "horizontal disable" or "hold-down".)

   Heed the high voltage limits. These include the X–ray Protection Specifications Label, and the Product Safety and X-ray Warning Note on the service data schematic.

1-1 Safety Precautions (Continued)

9. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

10. Design Alteration Warning:
    Never alter or add to the mechanical or electrical design of this unit. Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.

11. Hot Chassis Warning:
    Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord. If an isolation transformer is not used, these units may be safely serviced only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC source.

    To confirm that the AC power plug is inserted correctly, do the following: Using an AC voltmeter, measure the voltage between the chassis and a known earth ground. If the reading is greater than 1.0V, remove the AC power plug, reverse its polarity and reinsert. Re-measure the voltage between the chassis and ground.

12. Some TV chassis are designed to operate with 85 volts AC between chassis and ground, regardless of the AC plug polarity. These units can be safely serviced only if an isolation transformer inserted between the receiver and the power source.

13. Some TV chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.

14. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.

15. Observe the original lead dress, especially near the following areas: Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.

16. Picture Tube Implosion Warning:
    The picture tube in this receiver employs "integral implosion" protection. To ensure continued implosion protection, make sure that the replacement picture tube is the same as the original.

17. Do not remove, install or handle the picture tube without first putting on shatterproof goggles equipped with side shields. Never handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; do not try to remove such "permanently attached" yokes from the picture tube.

18. Product Safety Notice:
    Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original—even if the replacement is rated for higher voltage, wattage, etc.

    Components that are critical for safety are indicated in the circuit diagram by shading, (⚡) or (⚠).
    Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications.
    A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-2 Servicing Precautions

Warning1: First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.
Warning2: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.

2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.

3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.

4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.

5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).

6. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.

7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

8. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.

2. Immediately before handling any semicon ductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power—this is an electric shock precaution.)

3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.

4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.

5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.

6. Use only an anti-static solder removal device. Many solder removal devices are not rated as "anti-static"; these can accumulate sufficient electrical charge to damage ESDs.

7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.

8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

CAUTION

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

2. Specifications and IC Data

2-1 Specifications

Television System:

MODEL	SYSTEM
CT	NTSC ONLY

Channels:

System / Band	NTSC
VHF	2 - 13
UHF	14 - 69
CABLE	1 - 125

Intermediate Frequencies (MHz) :

SYSTEM / IF Carrier Frequency	NTSC
Picture IF Carrier	45.75
Sound IF Carrier	41.25
Color Sub Carrier	42.18

Picture Tube:

14 Inch	A34KQV42X	14Inch
15 Inch	A36QDT351X	15Inch Flat
20 Inch	A48KRD82X	20Inch
21 Inch	A51KQJ63X	21Inch

Power Requirements: AC 120V, 60Hz

Antenna Input Impedance: VHF, UHF : Telescopic dipole antenna (75 ohm unbalanced type)

Speaker Impedance 8 ohm

2-2 IC Line Up

Table 2-1 IC Line-Up

Loc. No	Specificatio	Description	Remark
IC201S	SPM458AN	TDA9377, English/Spanish/French	Philips
IC301	LA7840	VERTICAL OUTPUT	Sanyo
IC501	TDA6107Q	RGB DRIVE AMP	Philips
IC602	TDA7266M/TDA7266S	SOUND-AMP, TDA7266M (MONO) TDA7266S (STEREO)	Philips
IC801S	KA5Q0740RT (0765RT)	POWER IC (STR)	FIAIR CHILD
IC802	KA7632	CUSTOM REGULATOR (5V, 8V, 3.3V)	SEC
IC202	24C04	EEPROM	
PC801S	TCET1108 / LTV817B	PHOTO COUPLER	
ICS601	UPC1851B	Sound Processor (STEREO)	NEC

2-3 Semiconductor Base Diagrams

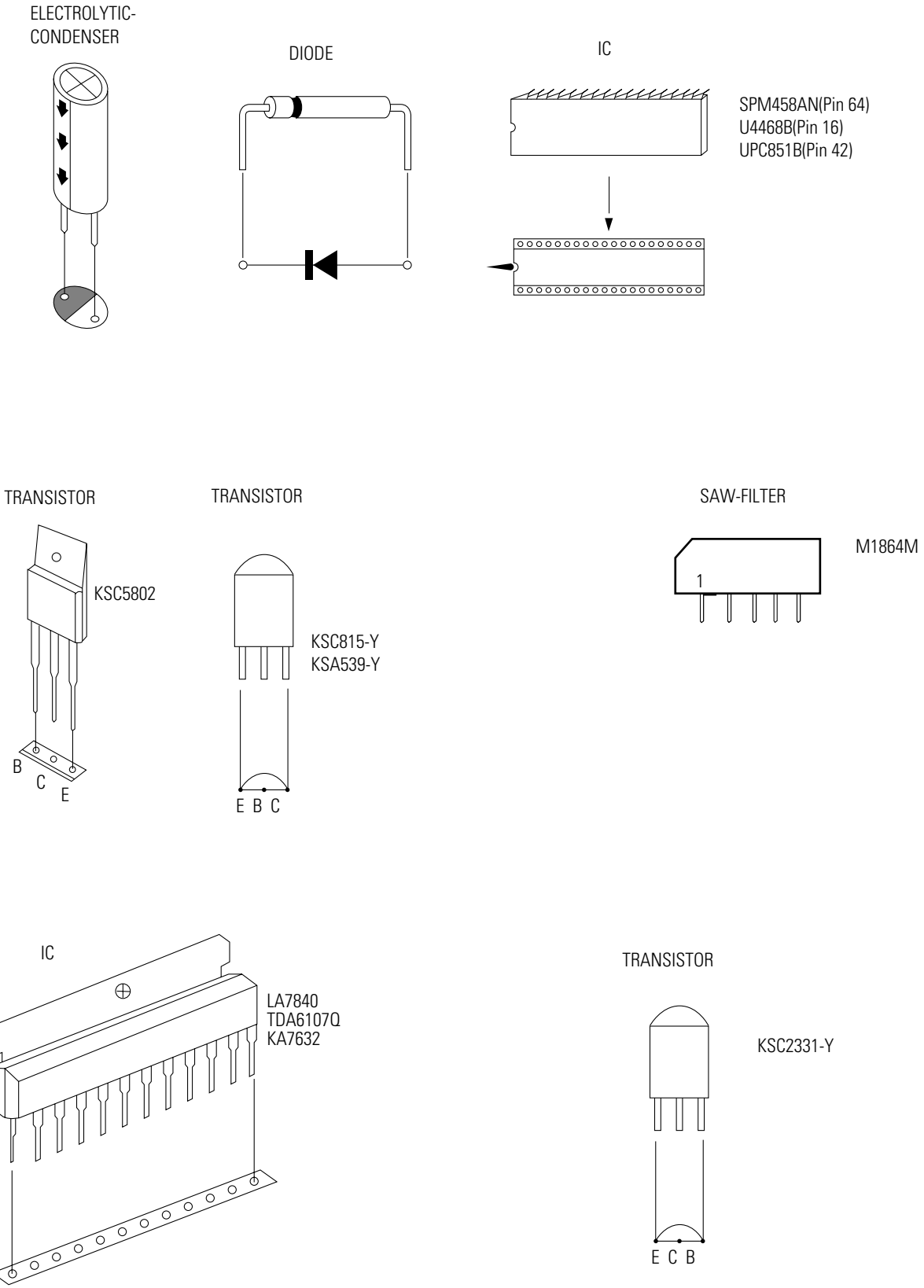

Fig. 2-1 Semiconductor Base Diagrams

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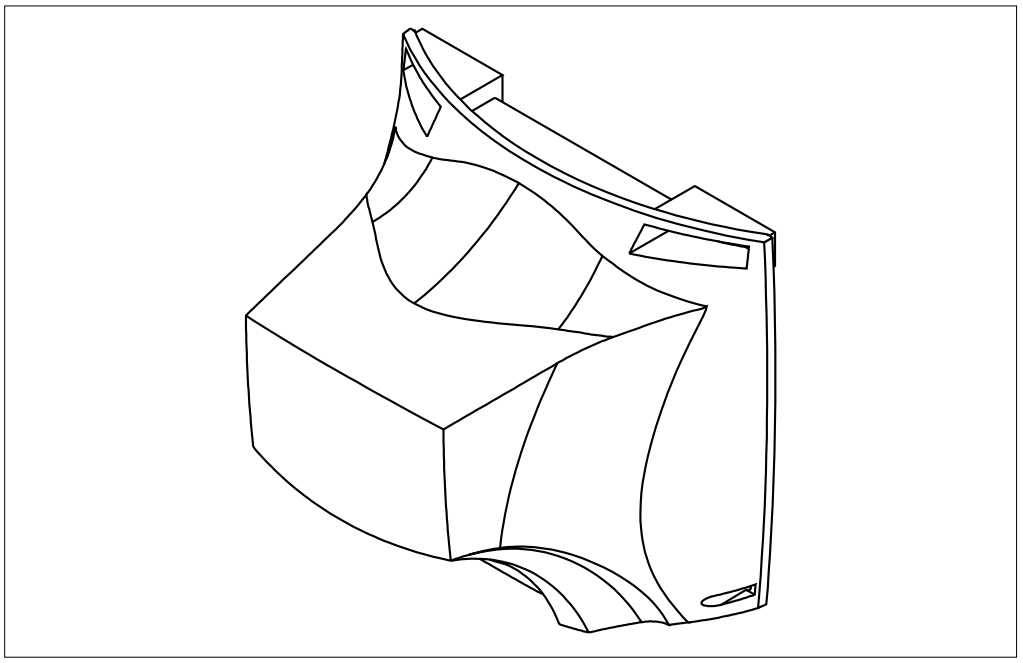
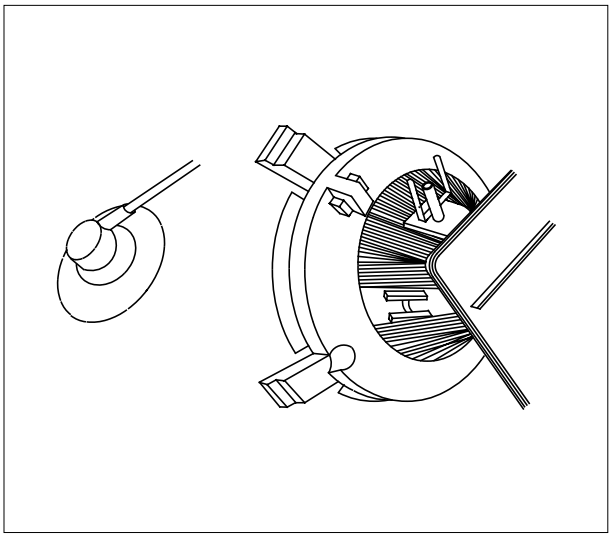
3. Disassembly and Reassembly

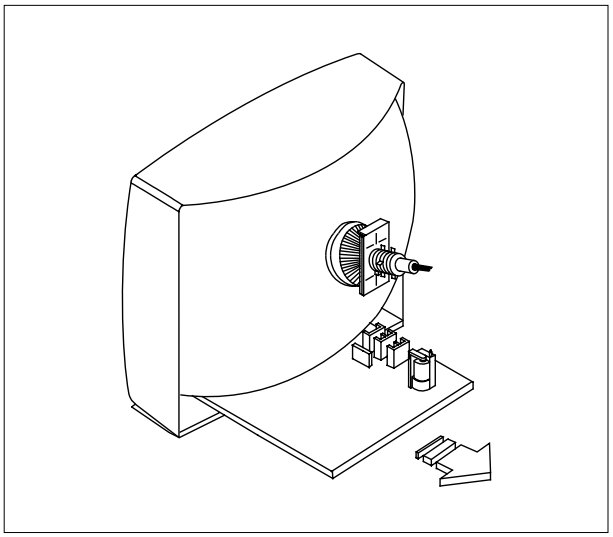
3-1 Back Cover Removal



1. After removing the screws, press the tension rib and pull the cabinet backwards.
2. To reassemble, press the tension rib (see diagram).

3-2 Main Board Removal

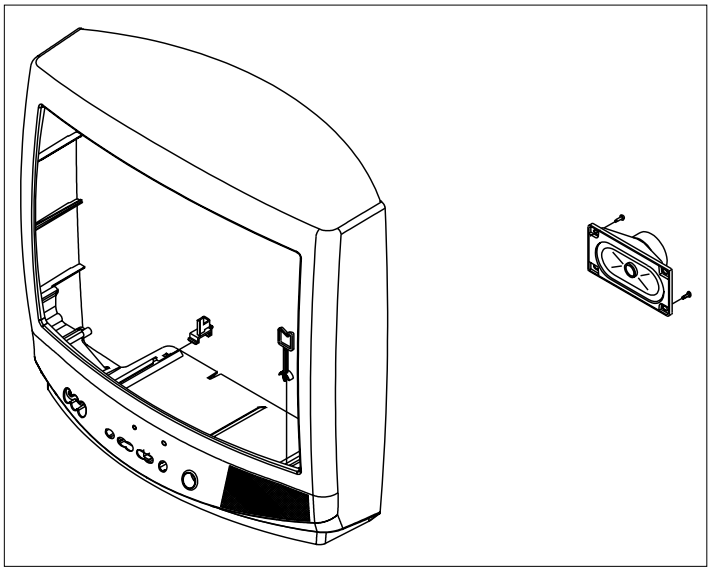




1. Separate the socket board from the CRT neck.
2. Remove the Anode Cap from the CRT.
3. Remove the main board by pulling it with both hands.

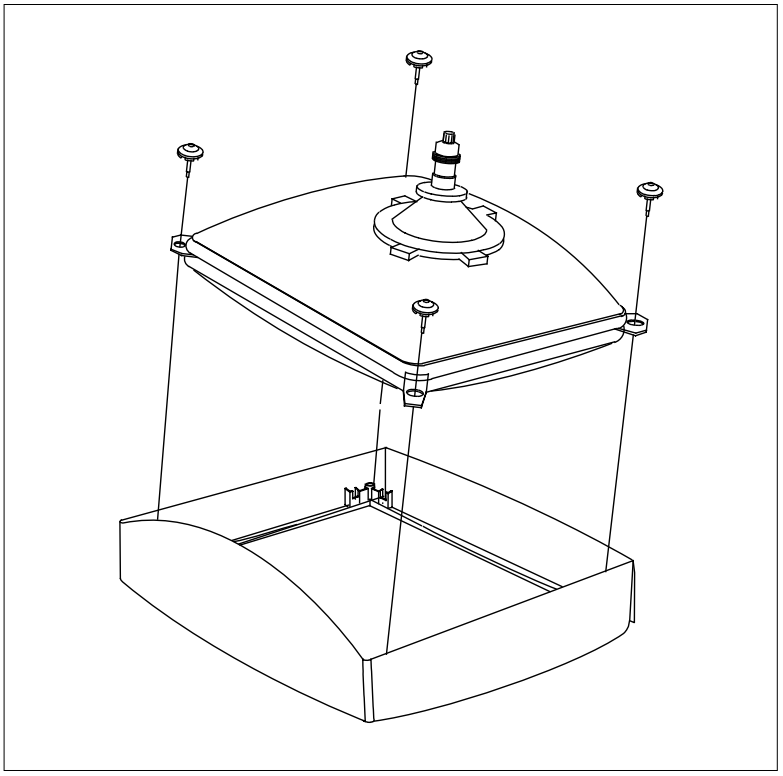
Warning: The FBT is charged with high voltage.
Before removing the Anode Cap, discharge the voltage through one of the heat sinks on the main board.

3-3 Speaker Removal



1. Remove the speaker by pressing the tension rib.

3-4 CRT Removal



1. Spread a soft mat on the floor. Place the TV set face down.

2. Remove the 4 nuts mounting the CRT to the front cabinet. Lift the CRT.

3. Caution: Because of the high vacuum and large surface area of the picture tube, be careful while handling it: (1) Always lift the picture tube by grasping it firmly around the faceplate, (2) Never lift the tube by its neck. (3) Do not scratch the picture tube or apply excessive pressure. Fractures of the glass may cause an implosion.

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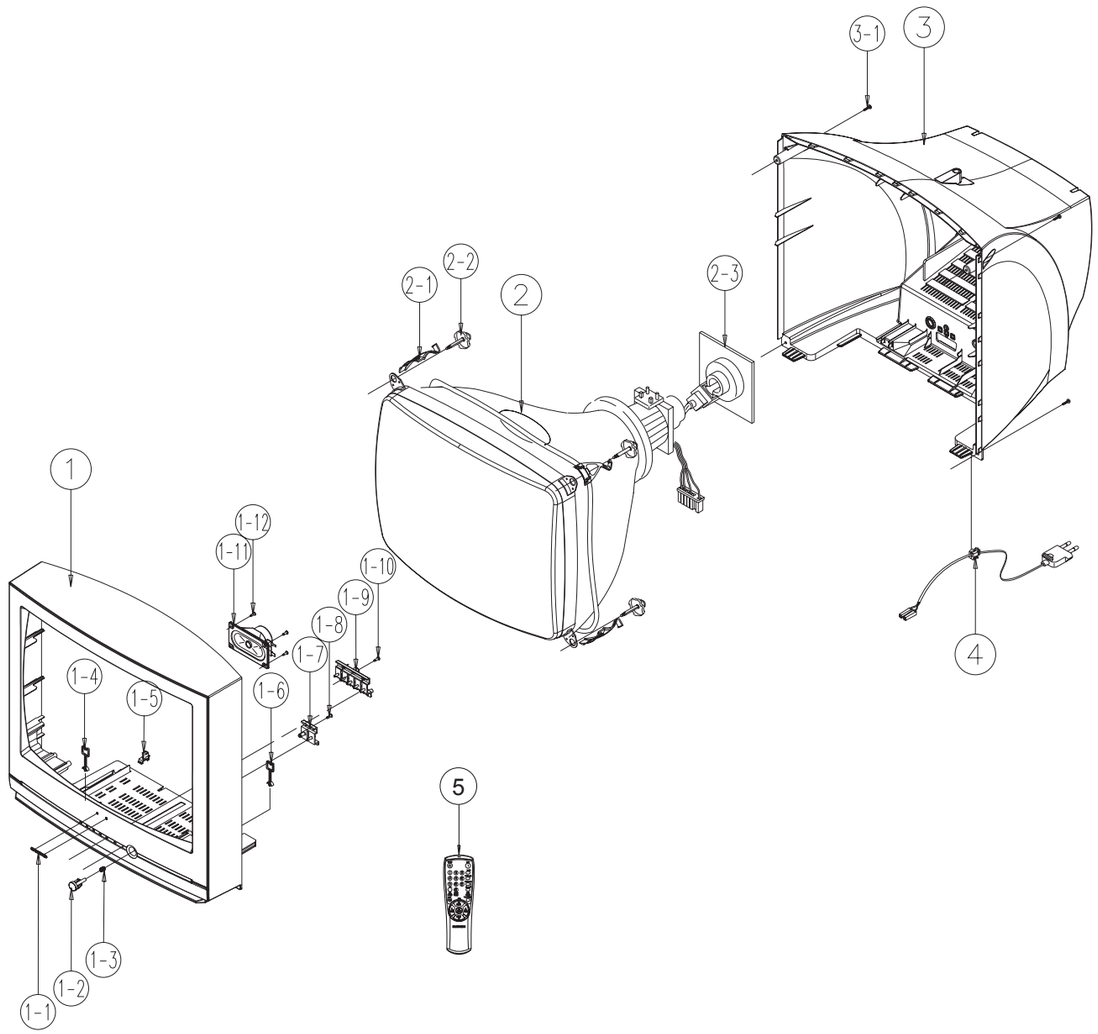
6. Exploded View & Parts List

6-1 CT20F3FNT/XAP

Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr



No.	Code No.	Description;Specification	Q'ty	Loc.No.	S.N.A
1	AA64-03156A	CABINET-FRONT;20F3(SAMEX),HIPS HB	1	T0003	
1-1	AA64-70126A	BADGE-BRAND;ALL,AL,T1.5,7.5,L45,R2000,SI	1	T0057	S.N.A
1-2	AA64-03008A	KNOB-POWER;14F3,ABS,HB,G3676,SVM-3012	1	T0023	S.N.A
1-3	AA61-60003J	SPRING ETC-CS;-,SUS304,-,-,OD6,N7,OD6,-,	1	CIS7	S.N.A
1-4	AA65-30105A	CLAMPER CORE-WIRE;ALL MODEL,NYLON 66,V2,	1	CWFC	S.N.A
1-5	AA61-40113A	STOPPER-PCB;501H,HIPS,-,-,HB,NTR,-	1	T0607	S.N.A
1-6	AA65-30018A	CLAMPER CORE-WIRE;DONG-A,NYLON-66,-,-,-,	1	CWIRE2	S.N.A
1-7	AA64-03012A	WINDOW-RMC,LED;14F3,PC,CLR	1	T0299	S.N.A
1-8	6002-000512	SCREW-TAPPING;RH,+,2,M4,L12,ZPC(BLK),SWR	1	T0081	S.N.A
1-9	AA64-03007A	KNOB-CONTROL;14F3,ABS,HB,G3676,SVM-3012	1	T0022	S.N.A
1-10	6002-000512	SCREW-TAPPING;RH,+,2,M4,L12,ZPC(BLK),SWR	1	T0081	S.N.A
1-11	AA96-10007A	ASSY SPEAKER;-,8ohm,3W,O5F14BRA,-,L300	1	T0522	S.N.A
1-12	6002-000512	SCREW-TAPPING;RH,+,2,M4,L12,ZPC(BLK),SWR	4	T0081	S.N.A
2	AA03-00246A	CRT COLOR;A48KRD82X(H),380MG,2.20MH,30.0	1	T0063	
2-1	AA61-00734A	HOLDER;25POLYVINYL,DEGAUSSING,T0.5,CHLO	2	CDCOIL	S.N.A
2-2	AA60-10050R	SCREW-MACHINE;-,SWRCH18A,M5,L31.5,HH,+,W	4	CCM1	S.N.A
2-3	3704-001105	SOCKET-CRT;11P,20PI,26.5PI,NI,-	1	V999S	
3	AA64-03157A	CABINET-BACK;20F3(SAMEX),HIPS HB	1	T0015	
3-1	6003-001026	SCREW-TAPTITE;RH,+,B,M4,L15,ZPC(BLK),SWR	4	T0081	S.N.A
4	AA96-20129C	ASSY POWER CORD;-,EP2/YES,H/C200,ME301P,	1	T0066	S.N.A
5	AA59-00232A	REMOCON;CT20R1,SAMSUNG,BLK,TM59,25,NTSC	1	T0074	

4. Alignment and Adjustments

4-1 Preadjustment

4-1-1 Factory Mode

1. Do not attempt these adjustments in the Video Mode.

2. The Factory Mode adjustments are necessary when either the EEPROM (IC902) or the CRT is replaced.

3. Do not tamper with the “Adjustment” screen of the Factory Mode menu. This screen is intended only for factory use.

4-1-2 When EEPROM (IC902) Is Replaced

1. When IC902 is replaced all adjustment data revert to initial values. It is necessary to re-program this data.

2. After IC902 is replaced, warm up the TV for 10 seconds.

4-1-3 When CRT Is Replaced

1. Make the following adjustments AFTER setting up after setting up purity and convergence :

   White Balance
   Sub-Brightness
   Vertical Center
   Vertical Size
   Horizontal Size
   Fail Safe (This adjustment must be the last step).

2. If the EEPROM or CRT is replaced and set SC as 20(factory mode).

4-2 Factory/Service Mode

4-2-1 Procedure for the “Adjustment” Mode

1. This mode uses the standard remote control. The Service Mode is activated by entering the following remote-control sequence :

   (1) DISPLAY → FACTORY.

   (2) STAND-BY → MUTE → 1 → 8 → 2 →POWER ON.

2. The “SERVICE (FACTORY)” message will be displayed. The Service Mode has four components: ADJUST, OPTION , G2-ADJUST and RESET.

3. Access the Adjustment Mode by pressing the “VOLUME” keys (Up or Down). The adjustment parameters are listed in the accompanying table, and selected by pressing the CHANNEL keys (▲ , ▼).

4. Selection sequences for the all system:

   DOWN or UP key:

   SCT>SBT>BLR>BLB>RG>GG>BG>VSL>VS>
   VA>HS>SC>CDL>STT>AKB>FS>NDL>
   LBS>NSR>SCBT>VOL>CAP>HBS>RP00>
   RP01>FMWS>AGC1>OMD>SCL>PWL>
   MUS>AGC>DSK>DVDB

5. The VOLUME keys increase or decrease the adjustment values (stored in the non-volatile memory) when Adjustment Mode is cancelled.

6. Cancel the Adjustment Mode by re-pressing the “FACTORY” or “Power OFF” keys.

4-2-2 Main Adjustment Parameter

NO	OSD	FUNCTION	RANGE	INITAL DATA	SETTING		REMARK
					19V	13V	
1	SCT	Sub Contrast	0 ~ 23	15	13	13	W/B (HIGH Y)
2	SBT	Sub Brightness	0 ~ 23	8	9	9	W/B A (LOW Y)
3	BLR	Black Level offset Red	0 ~ 63	35	31	31	W/B (LOW X, Y)
4	BLB	Black Level offset Blue	0 ~ 63	32	27	27	W/B (LOW X, Y)
5	RG	Red Gain	0 ~ 63	40	32	32	W/B (HIGH X, Y)
6	GG	Green Gain	0 ~ 63	30	25	25	FIX
7	BG	Blue Gain	0 ~ 63	42	31	31	W/B (HIGH X, Y)
8	VSL	Vertical Slope	0 ~ 63	30	31	31	Vertical SLOPE
9	VS	Vertical Shift	0 ~ 63	31	31	31	FIX
10	VA	Vertical Amplitude	0 ~ 63	20	40	20	Vertical SIZE
11	HS	Horizontal Shift	0 ~ 63	32	30	30	Horizontal SHIFT
12	SC	S-Correction	0 ~ 63	35	20	12	FIX
13	CDL	Cathode Drive Level	0 ~ 15	11	11	7	FIX
14	STT	Sub Tint	0 ~ 7	3	7	7	FIX
15	AKB	AKB On / off	0 ~ 1	0	0	0	FIX
16	FS	Filter Seting	0 ~ 15	32	37	37	FIX(STEREO)
17	NDL	NTSC Delay	0 ~ 15	1	1	1	FIX
18	LBS	Low Band Separation Set	0 ~ 63	32	32	32	FIX(STEREO)
19	NSR	NTSC Sub color	0 ~ 23	3	3	3	FIX
20	SCBT	Screen Brighrtness	0 ~ 63	35	45	45	FIX
21	VOL	Volume pre setting	0 ~ 63	10	10	10	FIX
22	CAP	Caption Position	0 ~ 15	12	12	12	FIX
23	HBS	High Band Separation Set	0 ~ 63	32	32	32	FIX(STEREO)
24	RP00	Ratio Pre / overshoot	0 ~ 1	1	1	1	FIX
25	RP01	Ratio Pre / overshoot	0 ~ 1	1	1	1	FIX
26	FMWS	Window Selection Sound PLL	0 ~ 1	0	0	0	FIX (Mono)
27	AGC1	IF AGC Speed	0 ~ 3	1	1	1	FIX (Nomal)
28	OMD	Offset IF Demodulator	0 ~ 63	32	32	32	FIX (No Crrection)
29	SCL	Soft Clipping Level	0 ~ 3	3	1	1	FIX (Off)
30	PWL	Peak White Limitting	0 ~ 15	15	13	13	FIX (100%)
31	MUS	Matrix USA	0 ~ 1	0	0	0	FIX (Mono)
32	AGC	Automatic Gain Control	0 ~ 63	33	33	33	FIX
33	DSK	Dynamic Skin Tone	0 ~ 1	0	0	0	FIX
34	DVDB	DVD Bright Offset	0 ~ 10	5	4	4	FIX

4-2-3 Option Bytes

In the Service Mode, various can be selected via the Option Table. Example:

Option Table : xx xx

	OSD	SETTING	REMARK
1	VIDEO MUTE (When swiching channel)	ON	- 800msec Mute Time(Tri-norma)
		OFF	- Unavailable
2	AUDIO	STEREO	- Zenith stereo (WITH IN UPC1851B)
		LINE STEREO	- Line stereo (WITH IN UPC1851B)
		MONO	- Mono (WITH OUT UPC1851B)
3	TURBO	ON	- Stereo/L STEREO Model
		OFF	- Mono Model
4	ZOOM	ZOOM	- Nornal / Zoom
		NOMAL	- Nomal
5	AUTO POWER ON	ON	- The power is switched on automatically when detaching the Master S/W Auto On
		OFF	- Tact S/W Model
6	SOUND MUTE (NO SIGNAL)	OFF	- Unavailable
		ON	- Available
7	LANGUAGE	ENGLISH	- Start Language Select
		ESPANOL	
		FRENCH/PORTU	
8	HOTEL MODE	OFF	- Unavailable
		ON	- Available
9	CATV	AIR/STD/HRC/IRC	
		AIR/STD/HRC/AFN	- U.S Army
10	X-RAY	ON	- Available (U.S.A, Army)
		OFF	- Unavailable (South America)
11	V-CHIP	ON	- Available (U.S.A)
		OFF	- Unavailable (Canada)
12	AV Option	TV ↔ AV	
		TV ↔ AV ↔ DVD	
13	DEMO	ON	- Available (South America)
		OFF	- Unavailable (U.S.A)

4-3 Other Adjustments

4-3-1 General

1. Usually, a color TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync and focus.

2. The picture should have good black and white details. There should be no objectionable color shading; if color shading is present, perform the purity and convergence adjustments described below.

3. Use the specified test equipment or its equivalent.

4. Correct impedance matching is essential.

5. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test results.

6. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.

7. Do not attempt to connect or disconnect any wires while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.

8. To protect against shock hazard, use an isolation transformer.

4-3-2 Automatic Degaussing

A degaussing coil is mounted around the picture tube, so that external degaussing after moving the TV should be unnecessary. But the receiver must be properly degaussed upon installation.

The degaussing coil operates for about 1 second after the power is switched ON. If the set has been moved or turned in a different direction, disconnect its AC power for at least 30 minutes.

If the chassis or parts of the cabinet become magnetized, poor color purity will result. If this happens, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube and the sides and front of the receiver. Slowly withdraw the coil to a distance of about 6 feet before removing power.

4-3-3 High Voltage Check

CAUTION: There is no high voltage adjustment on this chassis. The B+ power supply must be set to +122.5 volts (Full color bar input and normal picture level).

1. Connect a digital voltmeter to the second anode of the picture tube.
2. Turn on the TV. Set the Brightness and Contrast controls to minimum (zero beam current).
3. The high voltage should not exceed 30KV.
4. Adjust the Brightness and contrast controls to both extremes. Ensure that the high voltage does not exceed 30KV under any conditions.

4-3-4 FOCUS Adjustment

1. Input a black and white signal.
2. Adjust the tuning control for the clearest picture.
3. Adjust the FOCUS control for well defined scanning lines in the center area of the screen.

4-3-5 Cathode Voltage Adjustment (Screen Adjustment)

1. Connect CRT socket pin GK to an oscilloscope probe.
2. Input a gray scale pattern. (Use a pattern generator, PM5518)
3. Use the P mode key (on the remote control) for the STANDARD picture.
4. Adjust the Screen VR (on the FBT) so that the voltage on the oscilloscope becomes 125±2.5V (See Fig. 4-1).

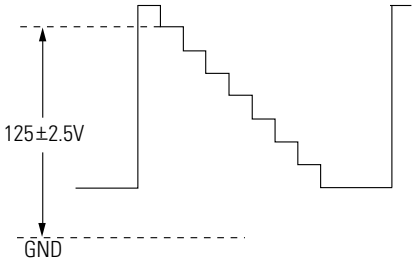


Fig. 4-1

4-3-6 Purity Adjustment

1. Warm up the receiver for at least 20 minutes.
2. Plug in the CRT deflection yoke and tighten the clamp screw.
3. Plug the convergence yoke into the CRT and set in as shown in Fig. 4-2.
4. Input a black and white signal.
5. Fully demagnetize the receiver by applying an external degaussing coil.
6. Turn the CONTRAST and BRIGHTNESS controls to maximum.
7. Loosen the clamp screw holding the yoke. Slide the yoke backward or forward to provide vertical green belt. (Fig. 4-3).
8. Tighten the convergence yoke.
9. Slowly move the deflection yoke forward, and adjust for the best overall green screen.
10. Temporarily tighten the deflection yoke.
11. Produce blue and red rasters by adjusting the low-light controls. Check for good purity in each field.
12. Tighten the deflection yoke.

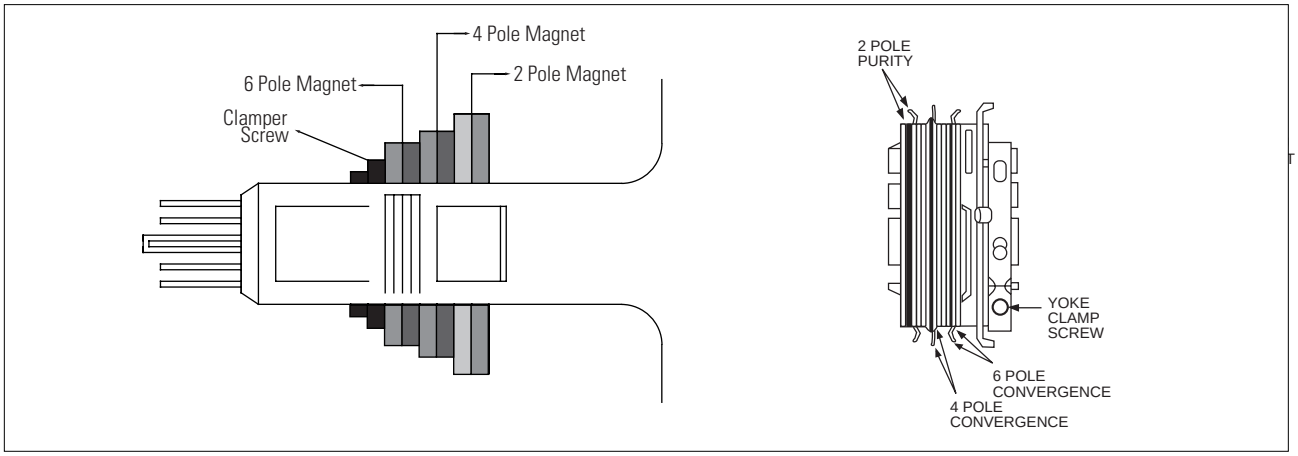


Fig. 4-2 Convergence Magnet Assembly

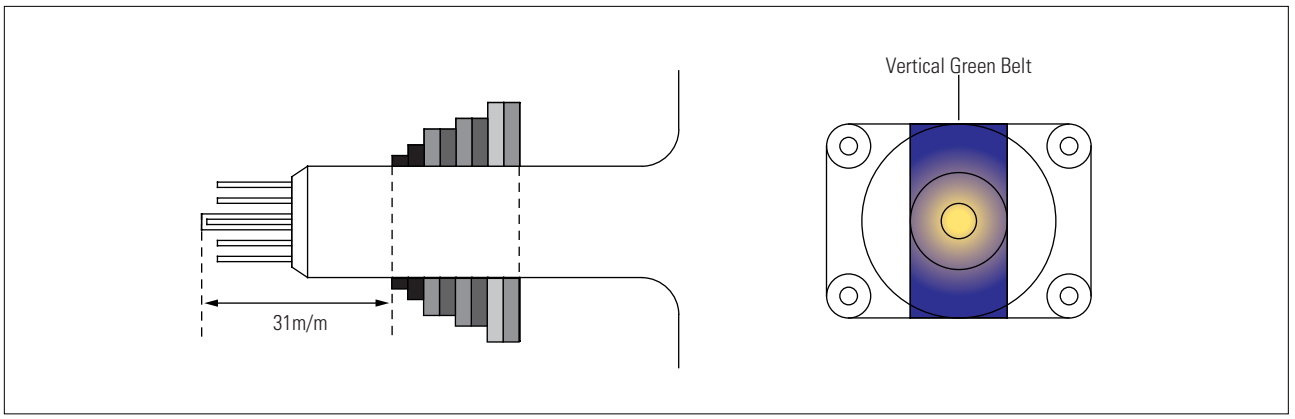


Fig. 4-3 Center Convergence Adjustment

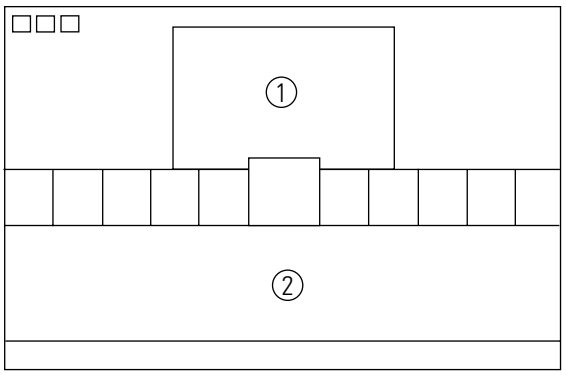


Fig. 4-4

4-3-7 White Balance Adjustment

(a) Set up

1. Warm up the TV for at least 30 minutes in the Aging Mode (OSD White). This mode is displayed by entering the following sequence:

   DISPLAY →FACTORY → FACTORY

2. Input a Toshiba pattern.

(b) Low-Light Adjustment

1. Set SBT to 1.2 fL in the Factory Service Mode with using CA100. See Fig. 4-4.

2. Adjust RG,BG so that the levels are suitable to each local area.

(c) High-Light Adjustment

1. Set SCT to 50FL(13V : 60FL) in the Factory Service Mode with using CA100.
   See Fig. 4-4 .

4-3-8 Center Convergence Adjustment

1. Warm up the receiver for at least 20 minutes.

2. Adjust the two tabs of the 4 pole magnets to change the angle between them. Superimpose the red and blue vertical lines in the center area of the screen.

3. Adjust the Brightness and Contrast controls for a well defined picture.

4. Adjust the two-tab pairs of the 4 pole magnets, and change the angle between them. Superimpose the red and the blue vertical lines in the center area of the screen.

5. Turn the both tabs at the same time, keeping the angle constant, and superimpose the red and blue horizontal line in the center of the screen.

6. Adjust the two-tab pairs of the 6-pole magnets to superimpose the red and blue line onto the green. (Changing the angle affects the vertical lines, and rotating both magnets affects the horizontal lines.)

7. Repeat adjustments 2~6, if necessary.

8. Since the 4-pole magnets and 6-pole magnets interact, the dot movement is complex (Fig. 4-5).

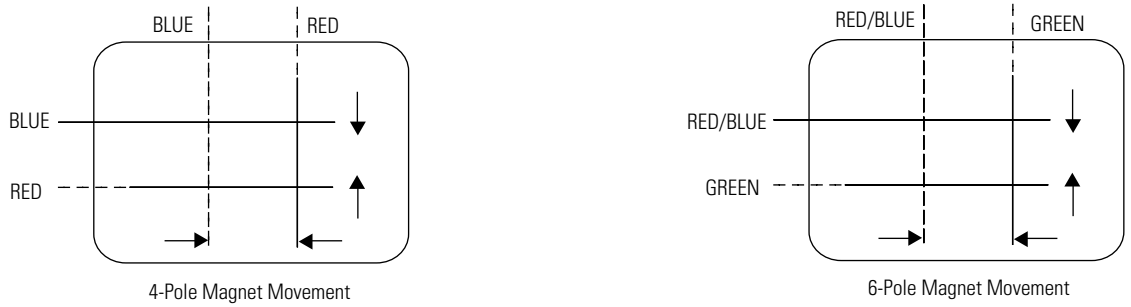


Fig. 4-5 Center Convergence Adjustment

4-3-9 RF AGC Adjustment

Set the AGC data to 33 (Factory Mode).

4-3-10 Sub-Color Adjustment

Set NSR data to 3 (Factory Mode).

4-3-11 Geometry Adjustment

SC →VS→VA→VSL→HS

1. Input a lion head pattern.
2. Set the SC (S-Correction) as 20(13V : 12) and VS(Vertical Shift) 31 so that the lion head circle becomes oval.
3. Adjust with VA (Vertical Amplitude) so that the top margin of the picture is 4.

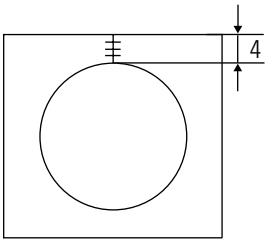


Fig. 4-7

4. Adjust with VSL (Vertical-Slope) so that the bottom margin of the picture is 4.

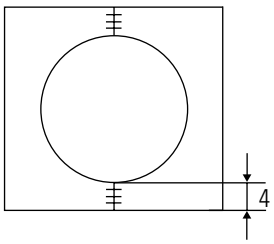


Fig. 4-8

5. Adjust with HS (Horizontal Shift) so that the lion-head pattern and CRT centers are aligned.

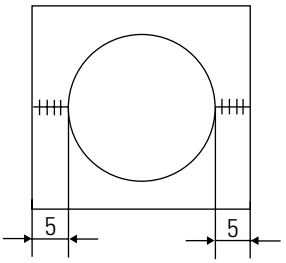


Fig. 4-9

6. Adjust HS (Horizontal Shift) so that the left and right margins of the picture are 5.

Yon can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr

7. Electrical Parts List

7-1 CT20F3FNT/XAP

ASSY COVER FRONT

Level	Loc.No.	Code No.	Description;Specification	Remark
1	M0001	AA90-04320B	ASSY COVER FRONT;CT20F3FX/XAX	S.N.A
..2	T0081	6002-000512	SCREW-TAPPING;RH,+,2,M4,L12,ZPC(BLK),SWR	S.N.A
..2	CCM1	AA60-10050R	SCREW-MACHINE;-,SWRCH18A,M5,L31.5,HH,+,W	S.N.A
..2	T0607	AA61-40113A	STOPPER-PCB;501H,HIPS,-,-,HB,NTR,-	S.N.A
..2	T0003	AA64-03156A	CABINET-FRONT;20F3(SAMEX),HIPS HB	
...3	T0081	6002-000512	SCREW-TAPPING;RH,+,2,M4,L12,ZPC(BLK),SWR	S.N.A
...3	T0081	6002-000512	SCREW-TAPPING;RH,+,2,M4,L12,ZPC(BLK),SWR	S.N.A
...3	CIS7	AA61-60003J	SPRING ETC-CS;-,SUS304,-,-,OD6,N7,OD6,-,	S.N.A
...3	T0299	AA64-03012A	WINDOW-RMC,LED;14F3,PC,CLR	S.N.A
...3	T0022	AA64-03007A	KNOB-CONTROL;14F3,ABS,HB,G3676,SVM-3012	S.N.A
...3	T0023	AA64-03008A	KNOB-POWER;14F3,ABS,HB,G3676,SVM-3012	S.N.A
..2	T0057	AA64-70126A	BADGE-BRAND;ALL,AL,T1.5,7.5,L45,R2000,SI	S.N.A
..2	CWIRE2	AA65-30018A	CLAMPER CORE-WIRE;DONG-A,NYLON-66,-,-,-,	S.N.A
..2	CWFC	AA65-30105A	CLAMPER CORE-WIRE;ALL MODEL,NYLON 66,V2,	S.N.A
..2	T0522	AA96-10007A	ASSY SPEAKER;-,8ohm,3W,O5F14BRA,-,L300	S.N.A
...3	T0082	3001-001037	SPEAKER;5W,8OHM,89DB,180HZ	
...3	T0245	AA39-20500G	LEAD CONNECTOR-ASSY;,3(2)P,300MM,67096-0	

ASSY COVER REAR

Level	Loc.No.	Code No.	Description;Specification	Remark
1	M0002	AA90-04321B	ASSY COVER REAR;CT20F3FX/XAX	S.N.A
..2	T0081	6003-001026	SCREW-TAPTITE;RH,+,B,M4,L15,ZPC(BLK),SWR	S.N.A
..2	T0015	AA64-03157A	CABINET-BACK;20F3(SAMEX),HIPS HB	
..2	T0214	AA65-30008A	CLAMPER CORE-CORD;-,PE,HB,-,BLK,-	S.N.A
..2	H/T	AA61-00356B	HOLDER-TUNER,F/JACK;501F,ABS,-,-,-,BLK,H	S.N.A
..2	T0069	AA60-00091J	SPACER-FELT;-,FELT,330X10,-,-,BLK,T0.5,-	S.N.A
..2	CLW/HS	AA65-30018A	CLAMPER CORE-WIRE;DONG-A,NYLON-66,-,-,-,	S.N.A

ASSY CPT

Level	Loc.No.	Code No.	Description;Specification	Remark
1	T0521	AA91-06032A	ASSY CPT;A48KRD82X(H)+380MG,NONAFTA,MALA	S.N.A
⚠ ..2	T0063	AA03-00246A	CRT COLOR;A48KRD82X(H),380MG,2.20MH,30.0	
..2	T0079	AA27-00002A	MAGNET CONVERGENCE;JH291-SC-OB,29.1MM,-,	
..2	T0078	AA27-00127A	DEFLECTION YOKE;,DSE-1992LL,PCL,A48KRD82	
..2	T0089	AA27-00254A	COIL DEGAUSSING;,20INCH,10%,70TS,4.5OHM,	
..2	CDCOIL	AA61-00734A	HOLDER;25POLYVINYL,DEGAUSSING,T0.5,CHLO	S.N.A
..2	SPACER	AA63-60028A	SPACER-DY;-,NEOPRENE,-,-,-,BLK,-,-,V0 W1	S.N.A
..2	A/TBC	AA97-01678A	ASSY TBC WIRE;,19,NTSC,1P,SAMEX	S.N.A
..2	M0162	6502-001019	CABLE CLAMP;DAMC-10,ID9.9,T7.1,NYLON6.6,	S.N.A

ASSY CHASSIS

Level	Loc.No.	Code No.	Description;Specification	Remark
1	M0017	AA91-07058A	ASSY CHASSIS;K15D,20,MONO,CT20F3	S.N.A
..2	FBT	AA65-30018A	CLAMPER CORE-WIRE;DONG-A,NYLON-66,-,-,-,	S.N.A
..2	M0014	AA94-14124A	ASSY PCB MAIN;20,MONO,K15D,F/V,LATIN	
...3		0202-001366	SOLDER-WIRE FLUX;-,RS60S,D1.2,63Sn/37Pb,	S.N.A
...3	T0090	0502-001265	TR-POWER;FJAF6810D,NPN,60000mW,TO-3PF,ST	
...3	IC112	1103-001209	IC-EEPROM;24C04,512x8,DIP,8P,10.16x7.11m	
...3	C598	2201-000446	C-CERAMIC,DISC;3.3NF,20%,400V,Y5U,BK,15X	
...3	CR401S	2303-001015	C-FILM,LEAD-PPF;5.5NF,5%,1.6KV,BK,29X9.5	
...3	SF101S	2904-001221	FILTER-SAW AV,45.75MHz,SIP5K,ST,14.2dB,M	
...3	SWN01	3404-000295	SWITCH-TACT;12VDC,50mA,160gf,8.4X22.7,SP	
...3	FP801S	3601-000281	FUSE-CARTRIDGE;250V,4A,TIME-LAG,GLASS,5.	
...3	V999S	3704-001105	SOCKET-CRT;11P,20PI,26.5PI,NI,-	
...3	JA701	3722-000162	JACK-PIN;2P,3.4mm,SN,BLK,-	
...3	T0119	AA09-00374A	IC MICOM;TDA9377PS/N2/AI,TXM1967,64P,3.3	
⚠ ...3	T801S	AA26-00172A	TRANS-SWITCHING;EER3543,K15D,90~264,PM2A	
...3	T0616	AA26-00065A	TRANS FBT;-,FSV-14A004C(S),14-22,125V	
⚠ ...3	T401	AA26-50001B	TRANS-HORIZ.DRIVE;-,-,-,7.1mH,-,-,102uH,	
⚠ ...3	LR401S	AA27-00053A	COIL-LINEARLITY;-,193uH,DR10X10 C:4.35,7	
⚠ ...3	LX801S	AA29-30001D	FILTER LINE NOISE;SQ1913,-,6.0MH,0.8A,-	
...3	RM901	AA32-00015A	MODULE-REMOCON;FRP-3521H31,38KHZ,940MM,M	
...3	CN501	AA39-20620B	LEAD-CONNECTOR;ASSY,9P,YBNH250-09,S,400m	
⚠ ...3	TU01S	AA40-00073A	TUNER-TECC1040PG32A(S),181CH,45.75MHZ,75	
...3	IC301	AA96-00244A	ASSY H/S;-,-,AA62-00046A,LA7840,-	S.N.A
....4		0205-001153	GREASE-SILICON;SC102,JAPAN,-	S.N.A
....4	T0088	1204-001483	IC-VERTICAL PROCESSO;LA7840,SIP,7P,708MI	
....4	T0081	6003-000335	SCREW-TAPTITE;RH,+,2S,M3,L8,ZPC(YEL),SWR	S.N.A
....4		AA62-00046A	HEAT SINK-PS;-,-,T1.0,-,D1(DREAM) 60X25X	S.N.A
...3	IC601	AA96-00244D	ASSY H/S;-,SOUND,AA62-00046A,TDA7266M,-	S.N.A
....4		0205-001153	GREASE-SILICON;SC102,JAPAN,-	S.N.A
....4	T0085	1201-001600	IC-AUDIO AMP;7266,ZSIP,15P,-,SINGLE,26dB	
....4	T0081	6003-000335	SCREW-TAPTITE;RH,+,2S,M3,L8,ZPC(YEL),SWR	S.N.A
....4		AA62-00046A	HEAT SINK-PS;-,-,T1.0,-,D1(DREAM) 60X25X	S.N.A
⚠ ...3	IC802	AA96-00245A	ASSY H/S;-,-,AA62-00055A,KA7632,-	S.N.A
....4	IC062	1203-001939	IC-MULTI REG.;7632,SIP,10P,-,PLASTIC,3.3	
....4	T0081	6003-000334	SCREW-TAPTITE;RH,+,2S,M3,L6,ZPC(YEL),SWR	S.N.A
....4		AA62-00055A	HEAT SINK-PS;-,-,T1.0,-,35*15*25,D1,-,-,	S.N.A
...3	IC501	AA96-50311A	ASSY-H/S;-,VIDEO,AA62-30175D,TDA6107Q,-	S.N.A
....4	T0074	1201-001159	IC-VIDEO AMP;6107,ZSIP,9P,-,SINGLE,-,PLA	
....4	T0081	6003-000334	SCREW-TAPTITE;RH,+,2S,M3,L6,ZPC(YEL),SWR	S.N.A
....4		AA62-30175D	HEAT SINK-PS;-,SECC,T1.0,-,33X15X30 FT-2	S.N.A
⚠ ...3	IC801S	AA96-00816A	ASSY H/S;,POWER,AA62-00112A,5Q0765RT,TRO	S.N.A
....4		0205-001153	GREASE-SILICON;SC102,JAPAN,-	S.N.A
....4	T0086	1203-001932	IC-PWM CONTROLLER;5Q0765,TO-220F,5P,185M	
....4	T0081	6003-000335	SCREW-TAPTITE;RH,+,2S,M3,L8,ZPC(YEL),SWR	S.N.A
....4		AA62-00112A	HEAT SINK;TROJAN,AL1050 ,T2.0,W54.0,H40.	S.N.A
...3	LD901	AA96-00555A	ASSY LED GUIDE;-,-,UEX-LD-030,GREEN	S.N.A
...3	C701	2401-002219	C-AL;220uF,20%,400V,GP,BK,25x40,10	
...3	T0900	1404-001045	THERMISTOR-NTC;4.7ohm,15%,2900K,35.0mW,T	
...3	CN906	3711-002642	CONNECTOR-HEADER;BOX,3P,1R,2.5mm,STRAIGH	
...3	P803T	1404-001265	THERMISTOR-PTC;4.5OHM/100OHM,+30/-20%,22	
...3	T0245	AA39-20010H	LEAD CONNECTOR-ASSY;,1P,300,YFH800-01,S,	
...3	A/AUTO	AA97-13358A	ASSY AUTO;K15D,20,F/V,MONO,LATIN,CT20F3	S.N.A
⚠ 4	CISS	0401-000005	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
⚠ 4	CISS	0401-000005	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
⚠ 4	CISS	0401-000005	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
⚠ 4	CISS	0401-000006	DIODE-SWITCHING;BAV21,250V,200MA,DO-35,T	
⚠ 4	CISS	0401-000006	DIODE-SWITCHING;BAV21,250V,200MA,DO-35,T	
....4	T0083	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
....4	T0083	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
....4	T0083	0402-000254	DIODE-RECTIFIER;RGP10J,600V,1A,DO-41,TP	
....4	T0083	0402-000493	DIODE-RECTIFIER;1R5GU41,400V,1.5A,DO-15L	
....4	T0083	0402-000534	DIODE-RECTIFIER;RG10V,400V,1.2A,DO-201,T	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001105	DIODE-RECTIFIER;ERB43-04SV1,400V,1A,TS-1	
....4	T0083	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
....4	T0083	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
....4	T0083	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
....4	T0083	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
....4	DZ016	0403-000508	DIODE-ZENER;MTZJ5.6B,5.45-5.73V,500MW,DO	
....4	DZ016	0403-000508	DIODE-ZENER;MTZJ5.6B,5.45-5.73V,500MW,DO	
....4	DZ016	0403-000508	DIODE-ZENER;MTZJ5.6B,5.45-5.73V,500MW,DO	
....4	DZ016	0403-000508	DIODE-ZENER;MTZJ5.6B,5.45-5.73V,500MW,DO	
....4	DZ016	0403-000508	DIODE-ZENER;MTZJ5.6B,5.45-5.73V,500MW,DO	

Level	Loc.No.	Code No.	Description;Specification	Remark
....4	DZ016	0403-000508	DIODE-ZENER;MTZJ5.6B,5.45-5.73V,500MW,DO	
....4	DZ016	0403-001039	DIODE-ZENER;MA2560,52-60V,1000MW,DO-41,T	
....4	DZ016	0403-000700	DIODE-ZENER;TZP33A,5%,1000MW,DO-41,TP	
....4	DZ016	0403-000700	DIODE-ZENER;TZP33A,5%,1000MW,DO-41,TP	
....4	DZ016	0403-000719	DIODE-ZENER;MTZJ7.5B,7.11-7.44V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-000720	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
....4	DZ016	0403-001140	DIODE-ZENER;RD10ESAB-T4,9.7-10.2V,400MW,	
....4	DZ016	0403-001211	DIODE-ZENER;MTZJ12B,11.8-12.3V,500MW,DO-	
....4	DZ016	0403-001221	DIODE-ZENER;UZ39BSB,35.36-37.19V,500MW,D	
....4	DZ016	0403-001318	DIODE-ZENER;MTZJ4.3B,4.17-4.43V,500MW,DO	
....4	DZ016	0403-001373	DIODE-ZENER;MTZJ5.1A,4.85-5.03V,500MW,D0	
....4	DZ016	0403-001327	DIODE-ZENER;MTZJ18A,16.22-17.06V,500MW,D	
....4	DZ016	0403-001328	DIODE-ZENER;MTZJ22A,20.15-21.2V,500MW,DO	
....4	DZ016	0403-001328	DIODE-ZENER;MTZJ22A,20.15-21.2V,500MW,DO	
....4	T0156	0501-000283	TR-SMALL SIGNAL;KSA539,PNP,400mW,TO-92,T	
....4	T0156	0501-000283	TR-SMALL SIGNAL;KSA539,PNP,400mW,TO-92,T	
....4	T0156	0501-000369	TR-SMALL SIGNAL;KSC2331-Y,NPN,1000mW,TO-	
....4	T0156	0501-002183	TR-SMALL SIGNAL;KTC9014,NPN,625mW,TO-92,	
....4	T0156	0501-002183	TR-SMALL SIGNAL;KTC9014,NPN,625mW,TO-92,	
....4	R125	2001-000005	R-CARBON;390ohm,5%,1/8W,AA,TP,1.8x3.2mm	
....4	R125	2001-000005	R-CARBON;390ohm,5%,1/8W,AA,TP,1.8x3.2mm	
....4	R125	2001-000005	R-CARBON;390ohm,5%,1/8W,AA,TP,1.8x3.2mm	
....4	R125	2001-000010	R-CARBON;68KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R075	2001-000016	R-CARBON(S);1OHM,5%,1/2W,AA,TP,2.4X6.4MM	
....4	R075	2001-000019	R-CARBON(S);10OHM,5%,1/2W,AA,TP,2.4X6.4M	
....4	R075	2001-000022	R-CARBON(S);33OHM,5%,1/2W,AA,TP,2.4X6.4M	
....4	R075	2001-000037	R-CARBON(S);330OHM,5%,1/2W,AA,TP,2.4X6.4	
....4	R075	2001-001138	R-CARBON(S);390OHM,5%,1/2W,AA,TP,2.4X6.4	
....4	R125	2001-000241	R-CARBON;1.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000241	R-CARBON;1.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000325	R-CARBON;120OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000397	R-CARBON;180KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000008	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000490	R-CARBON;200OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000563	R-CARBON;27KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000591	R-CARBON;3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000689	R-CARBON;390KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000739	R-CARBON;4.7MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000739	R-CARBON;4.7MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000786	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000793	R-CARBON;47OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000857	R-CARBON;560OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000924	R-CARBON;680OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000924	R-CARBON;680OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000947	R-CARBON;7.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000947	R-CARBON;7.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000947	R-CARBON;7.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R125	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	R075	2001-001037	R-CARBON(S);0.39OHM,5%,1/2W,AA,TP,2.4X6.	
....4	R075	2001-001062	R-CARBON(S);10MOHM,5%,1/2W,AA,TP,2.4X6.4	
....4	R075	2001-001078	R-CARBON(S);15KOHM,5%,1/2W,AA,TP,2.4X6.4	
....4	R303	2003-002238	R-METAL OXIDE(S)1.3OHM,5%2W,AF,TP,3.9X10	
....4	R075	2001-001108	R-CARBON(S);22KOHM,5%,1/2W,AA,TP,2.4X6.4	
....4	R075	2001-001114	R-CARBON(S);270OHM,5%,1/2W,AA,TP,2.4X6.4	
....4	R075	2001-001150	R-CARBON(S);470KOHM,5%,1/2W,AA,TP,2.4X6.	
....4	R075	2001-001150	R-CARBON(S);470KOHM,5%,1/2W,AA,TP,2.4X6.	
....4	R075	2001-001187	R-CARBON(S);75OHM,5%,1/2W,AA,TP,2.4X6.4M	
....4	R075	2001-001045	R-CARBON(S);1.2KOHM,5%,1/2W,AA,TP,2.4X6.	
....4	R0521	2002-001008	R-COMPOSITION;1.8Kohm,10%,1/2W,AA,TP,3.7	
....4	R0521	2002-001008	R-COMPOSITION;1.8Kohm,10%,1/2W,AA,TP,3.7	
....4	R0521	2002-001008	R-COMPOSITION;1.8Kohm,10%,1/2W,AA,TP,3.7	
....4	R0521	2002-001013	R-COMPOSITION;4.7Mohm,5%,1/2W,AA,TP,3.7x	
....4	R402	2003-002178	R-METAL OXIDE(S) 1Kohm,5%,2W,AG,TP,3.9X1	
....4	R316	2003-000652	R-METAL OXIDE(S);330ohm,5%,2W,AF,TP,4x12	
....4	R413	2003-000664	R-METAL OXIDE(S);33ohm,5%,2W,AF,TP,4x12m	
....4	R403	2003-002173	R-METAL OXIDE(S);7.5Kohm,5%,2W,AG,TP,3.9	
....4	R827	2003-000998	R-METAL OXIDE;300ohm,5%,2W,AF,TP,3.9x10m	
....4	R407	2003-001040	R-METAL OXIDE(S);47Kohm,5%,2W,AF,TP,3.9x	
....4	R834	2003-001040	R-METAL OXIDE(S);47Kohm,5%,2W,AF,TP,3.9x	
....4	R603	2004-000195	R-METAL;100Kohm,1%,1/8W,AA,TP,1.8x3.2m	
....4	R024	2004-001373	R-METAL(S);100Kohm,1%,1/2W,AA,TP,2.4x6.4	
....4	R024	2004-001402	R-METAL(S);6.8Kohm,1%,1/2W,AA,TP,2.4x6.4	
....4	R219	2004-001914	R-METAL;39Kohm,2%,1/8W,AA,TP,1.8x3.5mm	
....4	R024	2004-001371	R-METAL(S);1.5Kohm,1%,1/2W,AA,TP,2.4x6.4	
....4	R024	2004-001371	R-METAL(S);1.5Kohm,1%,1/2W,AA,TP,2.4x6.4	
....4	R304	2008-000253	R-FUSIBLE(S);0.47ohm,5%,1W,AF,TP,3.9x10m	
....4	R305	2008-000253	R-FUSIBLE(S);0.47ohm,5%,1W,AF,TP,3.9x10m	
....4	R801	2008-001107	R-FUSIBLE(S);300ohm,5%,2W,AG,TP,3.9x12mm	
....4	R608	2008-000284	R-FUSIBLE(S);0.1OHM,10%,2W,AF,TP,3.9X10M	
....4	R609	2008-000284	R-FUSIBLE(S);0.1OHM,10%,2W,AF,TP,3.9X10M	
....4	R824	2008-000294	R-FUSIBLE(S);33ohm,5%,2W,AF,TP,3.9x10mm	
....4	R422	2008-001011	R-FUSIBLE(S);0.18ohm,10%,2W,AF,TP,3.9x10	
....4	R421	2008-001011	R-FUSIBLE(S);0.18ohm,10%,2W,AF,TP,3.9x10	
....4	R420	2008-001047	R-FUSIBLE(S);68ohm,5%,2W,AF,TP,3.9x10mm	
....4	C806	2301-001435	C-FILM,LEAD-PPF;1.5nF,5%,1.2kV,TP,15x8x1	
....4	C598	2201-000192	C-CERAMIC,DISC;10PF,0.25PF,500V,NPO,-,5M	
....4	C598	2201-000145	C-CERAMIC,DISC;0.1NF,5%,50V,RH,TP,8.5X3M	
....4	C598	2201-000639	C-CERAMIC,DISC;680PF,10%,2KV,Y5P,-,5MM,T	
....4	C598	2201-000573	C-CERAMIC,DISC;0.047NF,5%,50V,C0G,TP,5X3	
....4	C598	2201-000573	C-CERAMIC,DISC;0.047NF,5%,50V,C0G,TP,5X3	
....4	C598	2201-000599	C-CERAMIC,DISC;0.56NF,10%,500V,Y5P,TP,5.	
....4	C598	2201-000639	C-CERAMIC,DISC;680PF,10%,2KV,Y5P,-,5MM,T	
....4	C598	2201-000723	C-CERAMIC,DISC;4.7NF,20%,3KV,Y5U,TP,16X5	
....4	C598	2201-000991	C-CERAMIC,DISC;0.56NF,10%,2KV,Y5P,TP,7.5	
....4	C689	2202-000127	C-CERAMIC,MLC-AXIAL;10nF,+80-20%,25V,Y5V	
....4	C689	2202-000127	C-CERAMIC,MLC-AXIAL;10nF,+80-20%,25V,Y5V	
....4	C689	2202-000127	C-CERAMIC,MLC-AXIAL;10nF,+80-20%,25V,Y5V	
....4	C689	2202-000796	C-CERAMIC,MLC-AXIAL;1NF,10%,50V,Y5P,TP,3	
....4	C689	2202-000796	C-CERAMIC,MLC-AXIAL;1NF,10%,50V,Y5P,TP,3	
....4	C689	2202-000796	C-CERAMIC,MLC-AXIAL;1NF,10%,50V,Y5P,TP,3	
....4	C689	2202-000796	C-CERAMIC,MLC-AXIAL;1NF,10%,50V,Y5P,TP,3	

Level	Loc.No.	Code No.	Description;Specification	Remark
....4	C689	2202-000825	C-CERAMIC,MLC-AXIAL;680pF,10%,50V,Y5P,TP	
....4	C689	2202-000829	C-CERAMIC,MLC-AXIAL;820pF,10%,50V,Y5P,TP	
....4	C689	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
....4	C2560	2301-000213	C-FILM,LEAD-PEF;220nF,5%,250V,TP,21.5x11	
....4	C2560	2301-000224	C-FILM,LEAD-PEF;22nF,5%,50V,TP,7.4x3.9x1	
....4	C2560	2301-000224	C-FILM,LEAD-PEF;22nF,5%,50V,TP,7.4x3.9x1	
....4	C2560	2301-000254	C-FILM,LEAD-PEF;39nF,5%,50V,TP,7.5x3.5x6	
....4	C2560	2301-000301	C-FILM,LEAD-PEF;6.8nF,5%,50V,TP,6.5X5.5X	
....4	C2560	2301-000301	C-FILM,LEAD-PEF;6.8nF,5%,50V,TP,6.5X5.5X	
....4	C2560	2301-000342	C-FILM,LEAD-PEF;2.2nF,5%,50V,TP,7.4x3.9x	
....4	C2560	2301-000342	C-FILM,LEAD-PEF;2.2nF,5%,50V,TP,7.4x3.9x	
....4	C2560	2301-000342	C-FILM,LEAD-PEF;2.2nF,5%,50V,TP,7.4x3.9x	
....4	C2560	2301-000383	C-FILM,LEAD-PEF;10nF,5%,50V,TP,6x7x3.2mm	
....4	C2560	2301-000445	C-FILM,LEAD-PEF;4.7nF,5%,50V,TP,5.5x7x3m	
....4	C420	2301-001065	C-FILM,LEAD-PPF;47nF,5%,630V,TP,19x15.5x	
....4	C2560	2305-000149	C-FILM,LEAD-PEF;100nF,5%,100V,TP,12x12.5	
....4	C2560	2305-000285	C-FILM,LEAD-PEF;220NF,5%,100V,TP,10.5X5.	
....4	C2560	2305-000289	C-FILM,LEAD-PEF;220nF,5%,63V,TP,-,5mm	
....4	C2560	2305-000289	C-FILM,LEAD-PEF;220nF,5%,63V,TP,-,5mm	
....4	C2560	2305-000289	C-FILM,LEAD-PEF;220nF,5%,63V,TP,-,5mm	
⚠ 4	CR405S	2305-000382	C-FILM,MPEF;4.7NF,5%,400V,TP,-,5MM.	
....4	C2560	2305-000412	C-FILM,LEAD-PEF;470nF,5%,63V,TP,-,5mm	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C2560	2305-000665	C-FILM,LEAD-PEF;100nF,5%,63V,TP,7.5x4.0x	
....4	C225	2301-001664	C-FILM,MPE-PPF;100nF,3%,50V,TP,20x16x8.5	
....4	C701	2401-000262	C-AL;100uF,20%,160V,HR,TP,16x25,7.5	
....4	C701	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
....4	C701	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
....4	C701	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
....4	C701	2401-000360	C-AL;100uF,20%,50V,GP,TP,8x11.5,5	
....4	C701	2401-000430	C-AL;10uF,20%,250V,GP,TP,10x16mm,5m	
....4	C701	2401-000055	C-AL;1uF,20%,160V,WT,TP,3x11,5mm	
....4	C701	2401-000603	C-AL;1UF,20%,50V,GP,TP,5X11,2	
....4	C701	2401-000603	C-AL;1UF,20%,50V,GP,TP,5X11,2	
....4	C701	2401-000660	C-AL;2.2uF,20%,50V,GP,TP,5x11,5	
....4	C701	2401-000660	C-AL;2.2uF,20%,50V,GP,TP,5x11,5	
....4	C701	2401-000927	C-AL;22uF,20%,250V,GP,TP,13x20,5	
....4	C701	2401-000962	C-AL;22uF,20%,50V,GP,TP,5x11,5	
....4	C701	2401-001192	C-AL;33uF,20%,50V,GP,TP,6.3x11,5	
....4	C701	2401-001232	C-AL;4.7uF,20%,250V,GP,TP,10x12.5,5	
....4	C701	2401-001397	C-AL;470uF,20%,25V,GP,TP,10x16,5	
....4	C701	2401-002288	C-AL;470uF,20%,25V,WT,TP,10x20,5	
....4	C701	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x11,5	
....4	C701	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x11,5	
....4	C701	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x11,5	
....4	C701	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x11,5	
....4	C701	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x11,5	
....4	C701	2401-001998	C-AL;1000uF,20%,25V,GP,TP,10x20,5mm	
....4	C701	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
....4	C701	2401-000050	C-AL;10uF,20%,16V,GP,TP,5x11,2.5	
....4	C701	2401-000050	C-AL;10uF,20%,16V,GP,TP,5x11,2.5	
....4	C701	2401-000050	C-AL;10uF,20%,16V,GP,TP,5x11,2.5	
....4	C701	2401-000050	C-AL;10uF,20%,16V,GP,TP,5x11,2.5	
....4	C701	2401-000050	C-AL;10uF,20%,16V,GP,TP,5x11,2.5	
....4	C701	2401-002290	C-AL;47uF,20%,160V,GP,TP,13x20,5	
....4	C701	2401-002594	C-AL;220uF,20%,16V,GP,TP,8x11.5,5	
....4	C701	2401-002619	C-AL;47uF,20%,25V,GP,TP,5x11,5	
....4	C701	2401-003028	C-AL;100uF,20%,25V,WT,TP,6.3x11,5	
....4	L103	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	
....4	L202	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	
....4	L903	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	
....4	R101	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	
....4	R102	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	
....4	L203	2701-000127	INDUCTOR-AXIAL;15UH,10%,2534	
....4	L301	2701-000142	INDUCTOR-AXIAL;1UH,10%,2534	
....4	L302	2701-000142	INDUCTOR-AXIAL;1UH,10%,2534	
....4	L404	2701-000142	INDUCTOR-AXIAL;1UH,10%,2534	
....4	L102	2701-000159	INDUCTOR-AXIAL;22UH,10%,4298	
....4	L201	2701-000159	INDUCTOR-AXIAL;22UH,10%,4298	
....4	L230	2701-000159	INDUCTOR-AXIAL;22UH,10%,4298	
....4	L405	2701-000159	INDUCTOR-AXIAL;22UH,10%,4298	
....4	L902	2701-000177	INDUCTOR-AXIAL;33UH,10%,2534	
....4	L904	2701-000177	INDUCTOR-AXIAL;33UH,10%,2534	
....4	L804	2701-001030	INDUCTOR-AXIAL;43UH,10%,4514	
....4	L807	2701-001030	INDUCTOR-AXIAL;43UH,10%,4514	
....4	F101	2901-000297	FILTER-EMI ON BOARD;-,3A,-,-,3.5x5,TP,-	
....4	L2514	3301-000287	BEAD-AXIAL;,3.5x1.0x6.0mm,3000mA,TP,,,50	
....4	L2514	3301-000287	BEAD-AXIAL;,3.5x1.0x6.0mm,3000mA,TP,,,50	
....4	L2514	3301-000287	BEAD-AXIAL;,3.5x1.0x6.0mm,3000mA,TP,,,50	
....4	L2514	3301-000287	BEAD-AXIAL;,3.5x1.0x6.0mm,3000mA,TP,,,50	
....4	SW901	3404-000244	SWITCH-TACT;15V,20mA,90-170gf,7.5x7mm,SP	
....4	SW902	3404-000244	SWITCH-TACT;15V,20mA,90-170gf,7.5x7mm,SP	
....4	SW903	3404-000244	SWITCH-TACT;15V,20mA,90-170gf,7.5x7mm,SP	
....4	SW904	3404-000244	SWITCH-TACT;15V,20mA,90-170gf,7.5x7mm,SP	
....4	SW905	3404-000244	SWITCH-TACT;15V,20mA,90-170gf,7.5x7mm,SP	
⚠ 4	FD801S	3601-001086	FUSE-AXIAL LEAD;125V,5A,FAST-ACTING,GLAS	
....4	F801A	3602-000114	FUSE-HOLDER;-,-,30mohm	
....4	F801B	3602-000114	FUSE-HOLDER;-,-,30mohm	
....4	02VER	AA41-00625C	PCB-MAIN;TXM1967X/XAA,FR-1,1L,C,1.6T,245	S.N.A
....4	EY401	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY402	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY403	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY404	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY405	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY414	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY415	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY416	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY417	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY418	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY419	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY420	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY421	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY501	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY819	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY827	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY829	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EY833	6042-000002	EYELET;ID1.5,OD2,L2.8,NI+SN,BSP3-1/2H	S.N.A
....4	EL401	6042-000001	EYELET;ID2.2,OD2.7,L3.1,NI+SN,BSP3-1/2H	S.N.A
....4	EL402	6042-000001	EYELET;ID2.2,OD2.7,L3.1,NI+SN,BSP3-1/2H	S.N.A
....4	EL801	6042-000001	EYELET;ID2.2,OD2.7,L3.1,NI+SN,BSP3-1/2H	S.N.A
....4	EL802	6042-000001	EYELET;ID2.2,OD2.7,L3.1,NI+SN,BSP3-1/2H	S.N.A
....4	GT501	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT801	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT802	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT803	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT804	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT805	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT101	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	GT806	AA60-40014A	PIN-GT,ASSY;AUTO	S.N.A
....4	Z201	2903-000129	FILTER-CERAMIC;BR,4.5MHz,-,-,-,TP,-	
....4	C701	2401-002009	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
....4	R505	2008-000264	R-FUSIBLE(S);1ohm,5%,1W,AF,TP,3.9x10mm	
....4	R825	2008-000264	R-FUSIBLE(S);1ohm,5%,1W,AF,TP,3.9x10mm	
⚠ 4	CR403S	2306-000179	C-FILM,LEAD-PPF;300nF,5%,250V,TP,20x18.5	
....4	C701	2401-000703	C-AL;2200uF,20%,25V,GP,-,12.5x25mm,	
....4	T0083	0402-001443	DIODE-RECTIFIER;EGP20K,800V,2A,TO-220F,T	
....4	R811	2003-002239	R-METAL OXIDE(S);100KOHM,5%,2W,AF,TP,3.9	
....4	R812	2003-002239	R-METAL OXIDE(S);100KOHM,5%,2W,AF,TP,3.9	
....4	C701	2401-001914	C-AL;1uF,20%,50V,BP,TP,5x11,5	
....4	L2514	3301-001223	BEAD-AXIAL;62ohm,3.5x0.8x5mm,,TP,,,	
....4	L2514	3301-001223	BEAD-AXIAL;62ohm,3.5x0.8x5mm,,TP,,,	
....4	C2560	2301-000289	C-FILM,LEAD-PEF;5.6nF,5%,50V,TP,7x6x3,5	
....4	R125	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
....4	C701	2401-000365	C-AL;100uF,20%,50V,WT,TP,10x12.5mm,	
...3	X901	2801-004033	CRYSTAL-UNIT;12MHZ,30PPM,28-AAM,30PF,30O	
...3	GT301	AA60-40012D	PIN-GT,ASSY;4P,T1.6,6-12.5-14MM,NYLON66	S.N.A
⚠ ...3	T0066	AA96-20129C	ASSY POWER CORD;-,EP2/YES,H/C200,ME301P,	S.N.A
....4	T0077	AA39-10007Y	CBF POWER CORD;-,EP2/YES,SPT-2 18AWGx2C,	
....4		AA61-20284A	HOLDER;P-CORD,PP,-,-,-,BLK,VO,KE-002	S.N.A

ASSY ACCESSORY

1	M0045	AA92-08377A	ASSY ACCESSORY;K15D,14/20,XAP	S.N.A

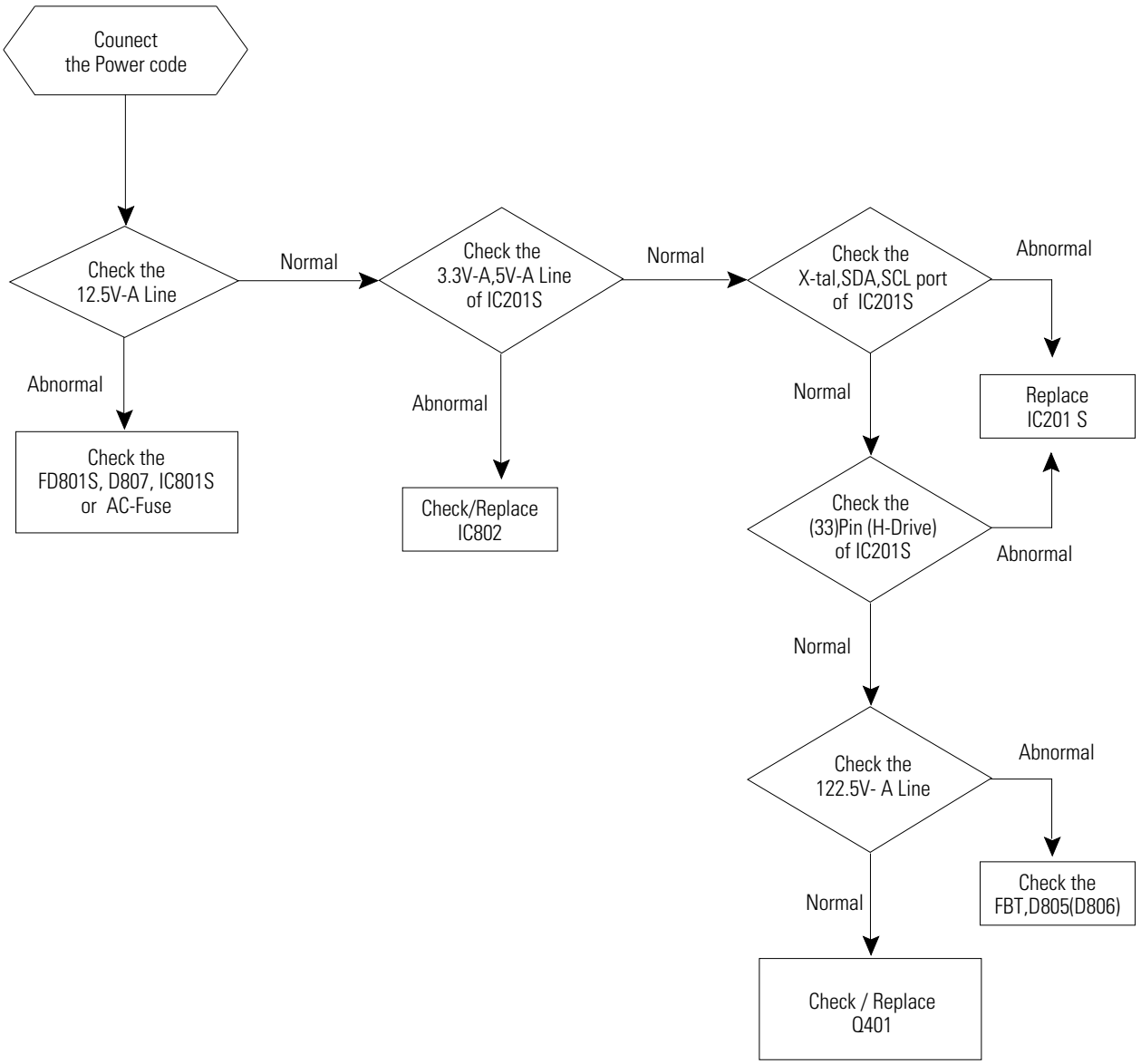
Level	Loc.No.	Code No.	Description;Specification	Remark
..2	T0080	AA26-90001F	TRANS MATCHING;-,300ohm/75ohm,NTSC,40-89	
..2	T0075	AA42-00004A	ANT ROD;CXD1334,VHF,4SDODIPOLE850MMBRN	
..2	T0074	AA59-00232A	REMOCON;CT20R1,SAMSUNG,BLK,TM59,25,NTSC	
..2	T0152	AA68-00987A	CARD WARRANTY;-,-,W/P100,-,-,-,-,-,A4,1P	S.N.A
..2	T0511	AA68-02665A	MANUAL USERS;ENG,W/P100(G),B5,K15D	S.N.A
..2	T0511	AA68-02666A	MANUAL USERS;SPA,W/P100(G),B5,K15D	S.N.A
..2	BAG-PE	AA69-01195A	BAG PE;CL29A6W8X,HDPET0.012,93/4X151/2	S.N.A

ASSY P/MATERIAL

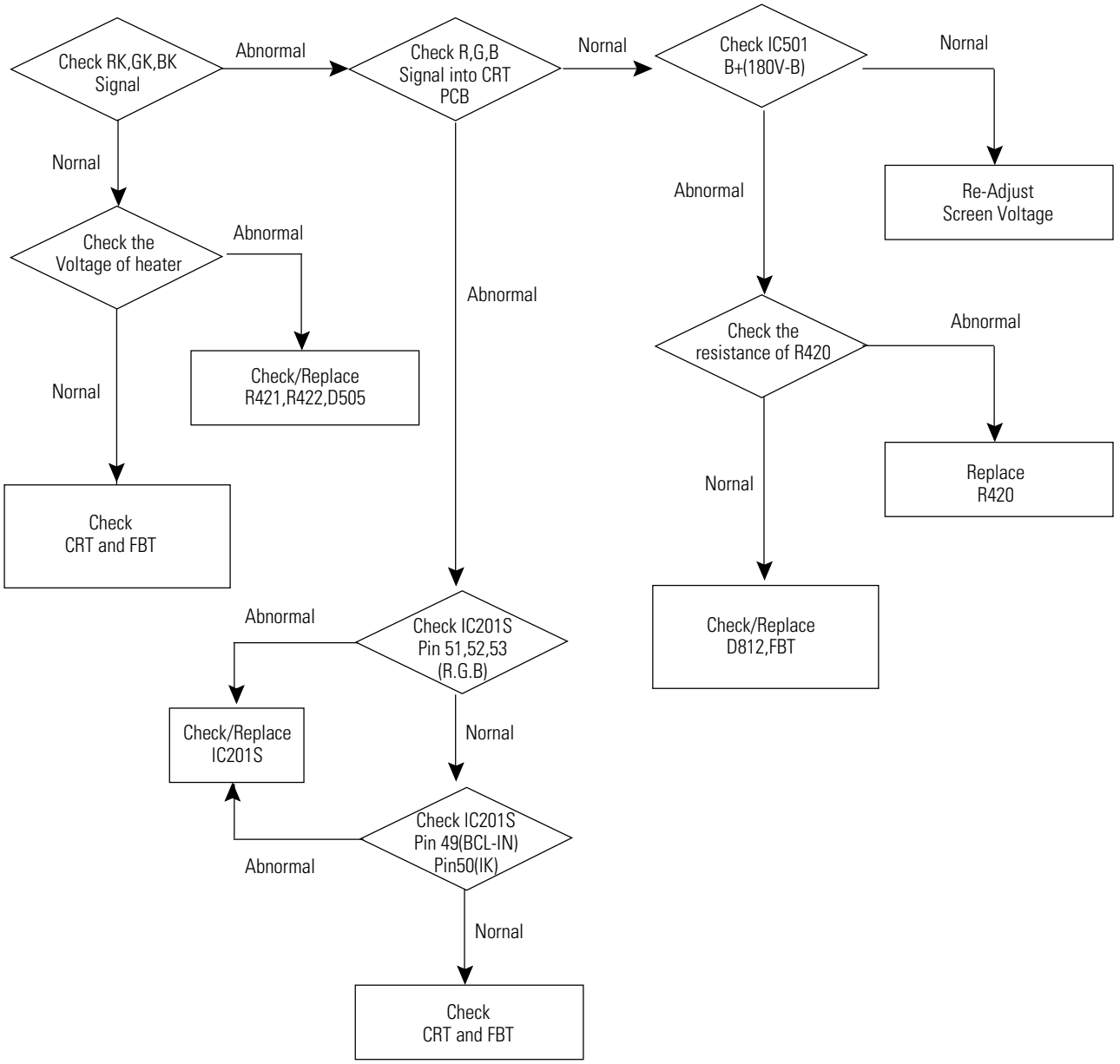
Level	Loc.No.	Code No.	Description;Specification	Remark
1	A/PACK	AA92-07233B	ASSY P/MATERIAL;CT20F3FX/XAX	S.N.A
..2	PE-BAG	AA69-01208A	BAG;SHEET,19-20,W42,L50,FOAM,OEM	S.N.A
..2	T0214	AA60-40006A	PIN-STAPLE;AUTO,33X17.8X2.4,H18,33X17.8X	S.N.A

5. Troubleshooting

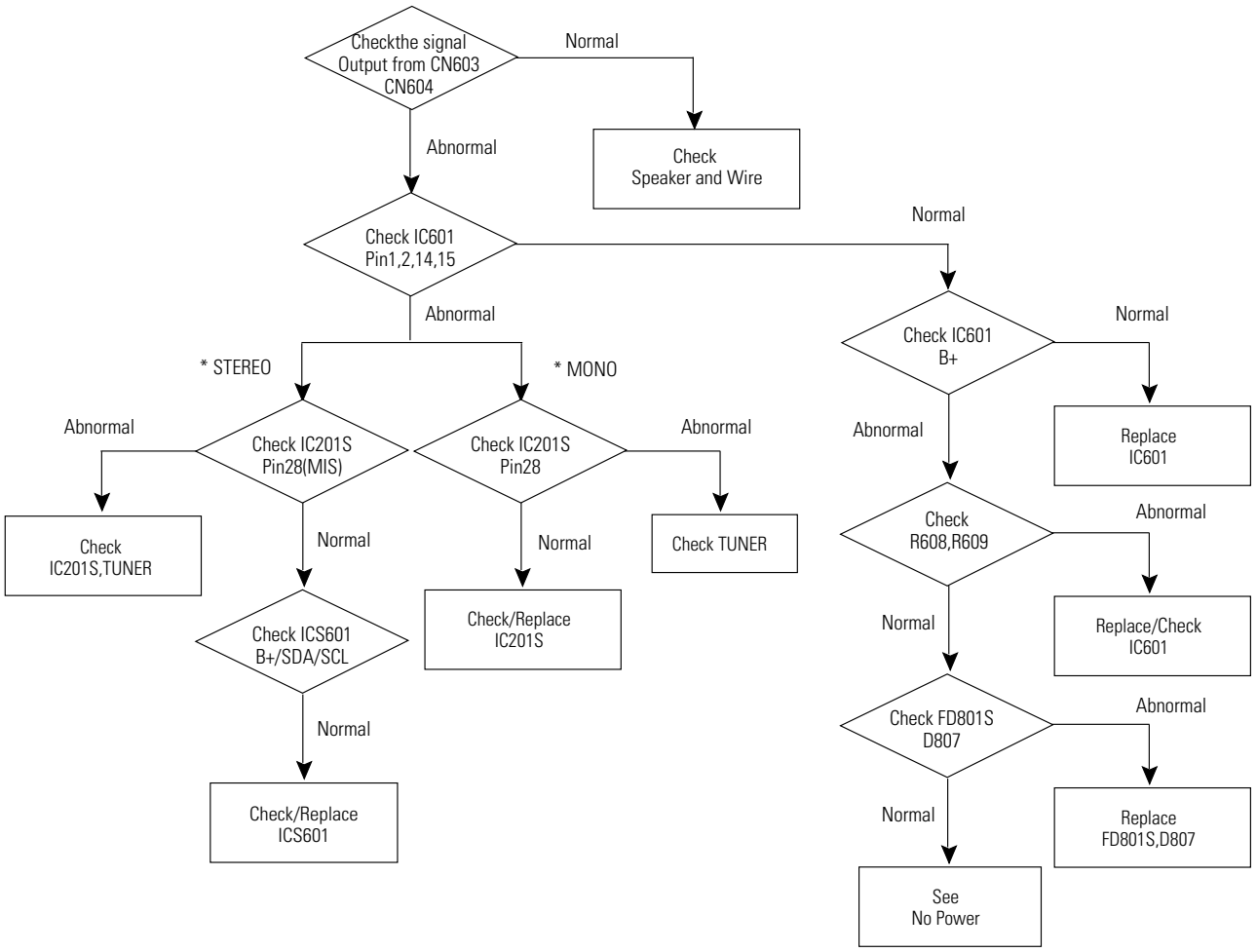
5-1 No Power



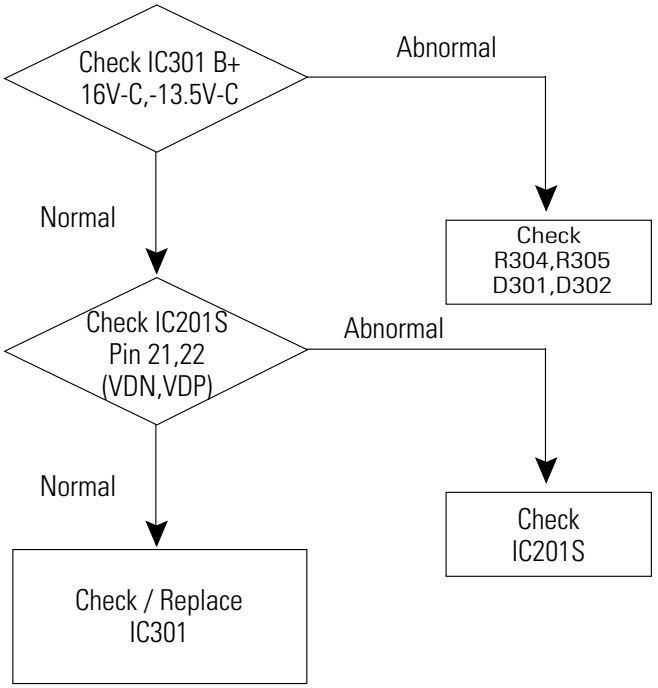
5-2 No Video (Sound OK)



5-3 No Sound (Video OK)

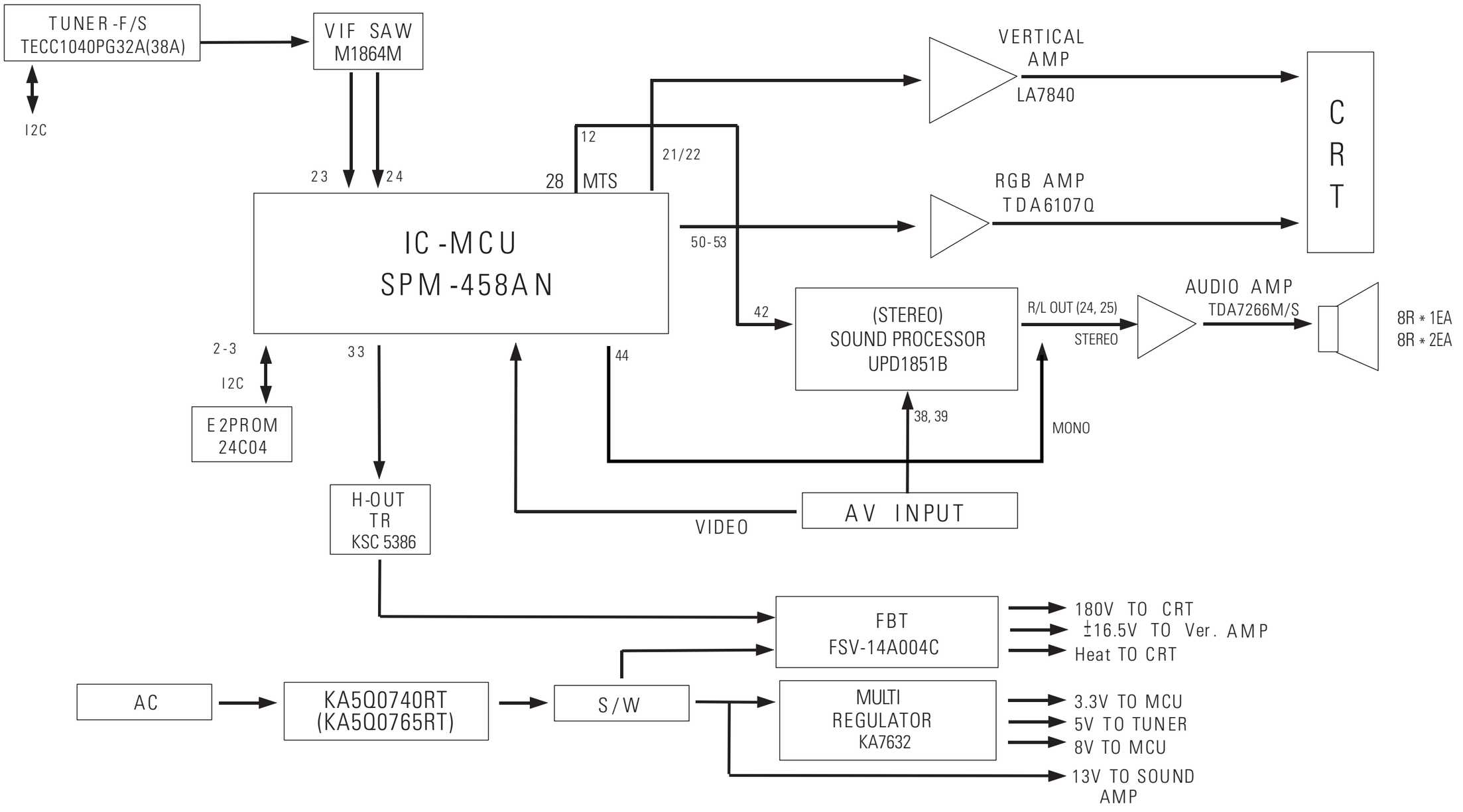


5-4 Vertical Lines Appear or Screen



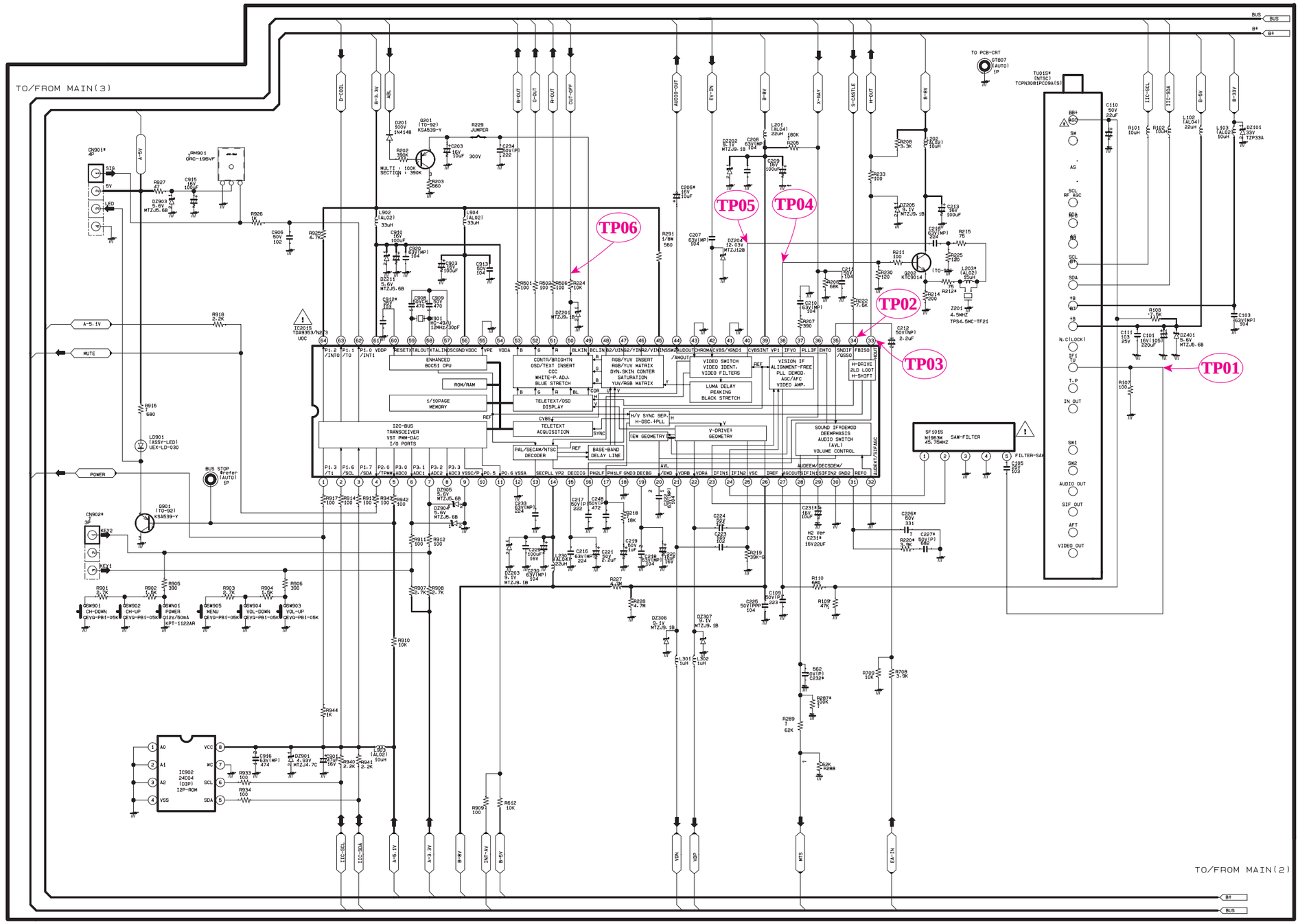
8. Block Diagram

8-1 K15D

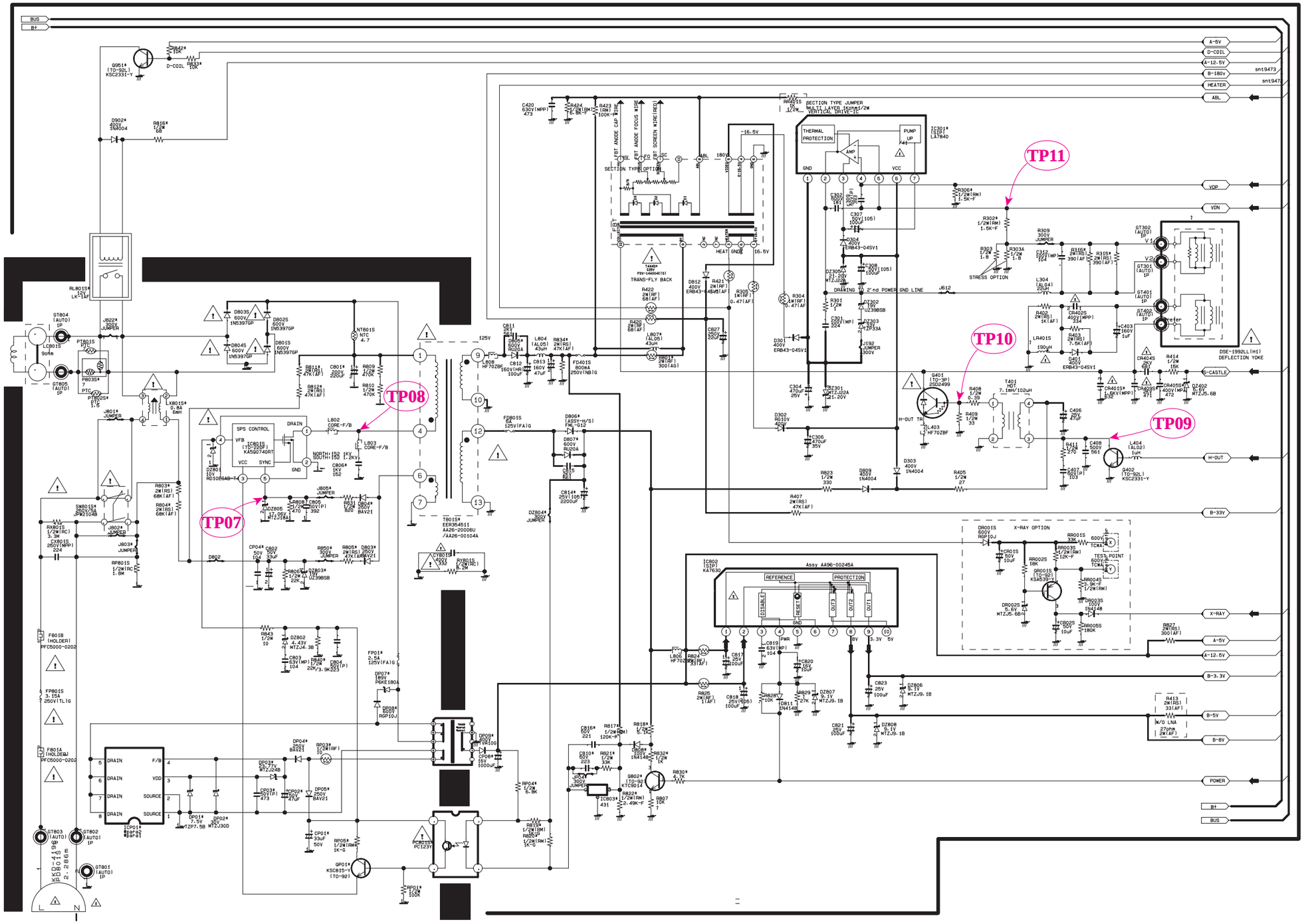


10. Schematic Diagrams

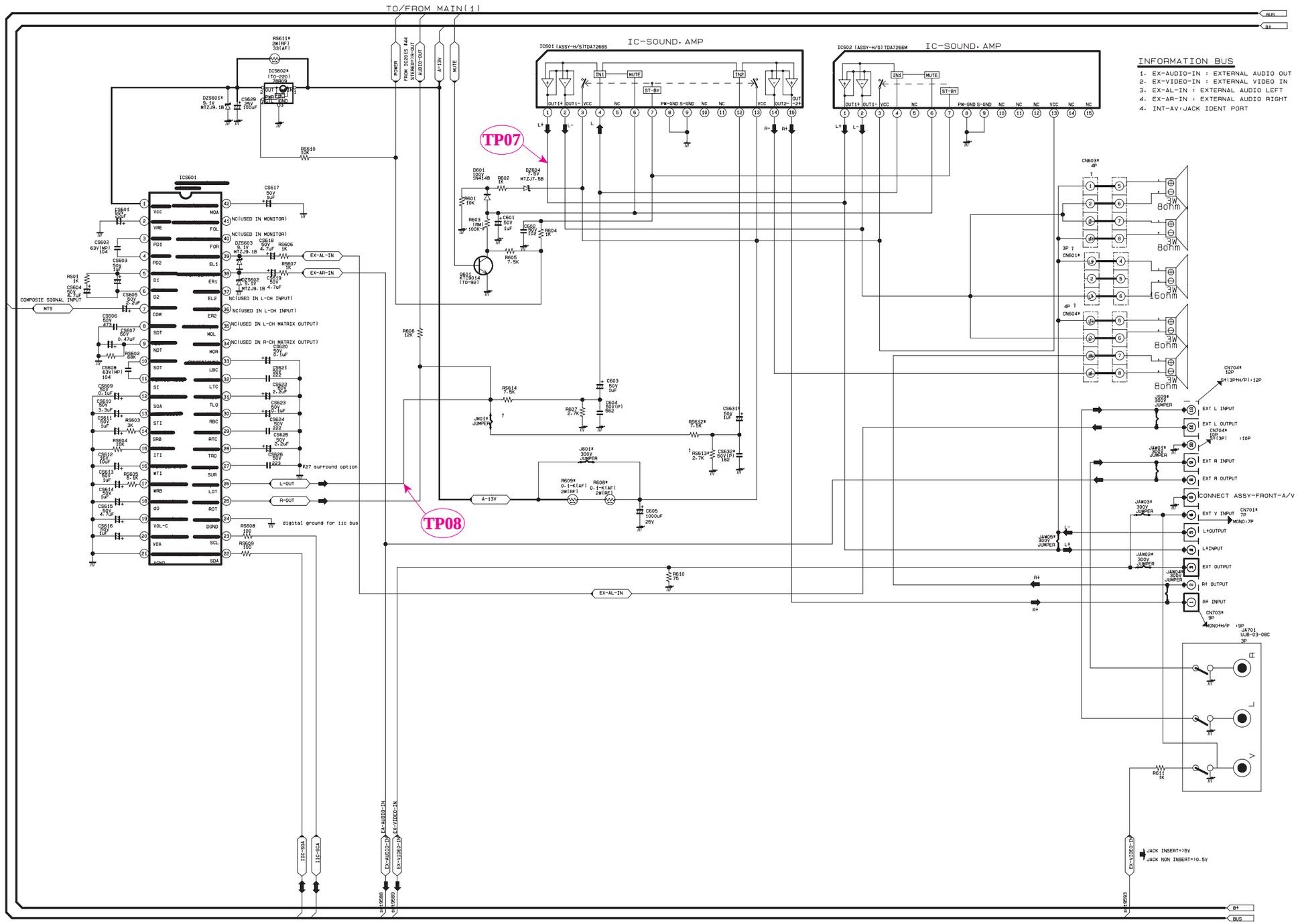
10-1 MAIN (1/4)

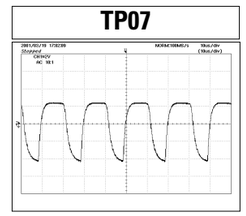


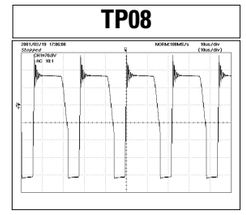
10-2 MAIN (2/4)


TP07
TP08
TP09
TP10
TP11
BUS
B+
A-5V
D-COIL
A-12.5V
B-180V
HEATER
ABL
snt9473
snt9472
VDP
VDN
G-CASTLE
H-OUT
B-33V
X-RAY
A-5V
A-12.5V
B-3.3V
B-5V
B-8V
POWER
DSE-1992LL(Hi)
DEFLECTION YOKE
SECTION TYPE JUMPER
THERMAL PROTECTION
PUMP UP
AMP
GND
VCC
TRANS-FLY BACK
STRESS OPTION
DRAWING
2'nd POWER GND LINE
H-OUT TR
X-RAY OPTION
REFERENCE
PROTECTION
DISABLE
RESET
SPS CONTROL
DRAIN
SOURCE
VFB
VCC
SYNC
GND
F/B
VDD
HEAT GND
-16.5V
16.5V
3.3V
5V
8V

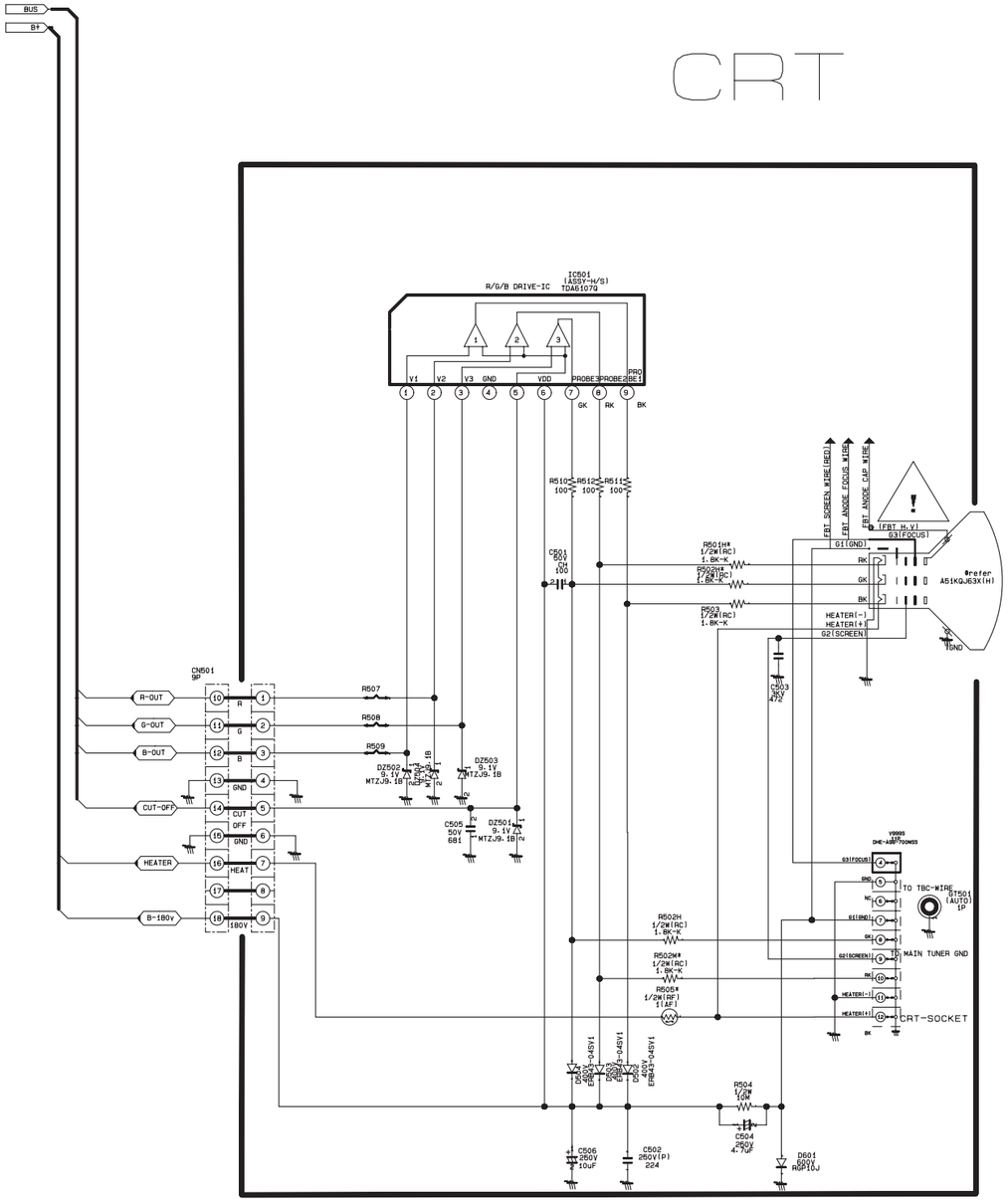
10-3 MAIN (3/4)

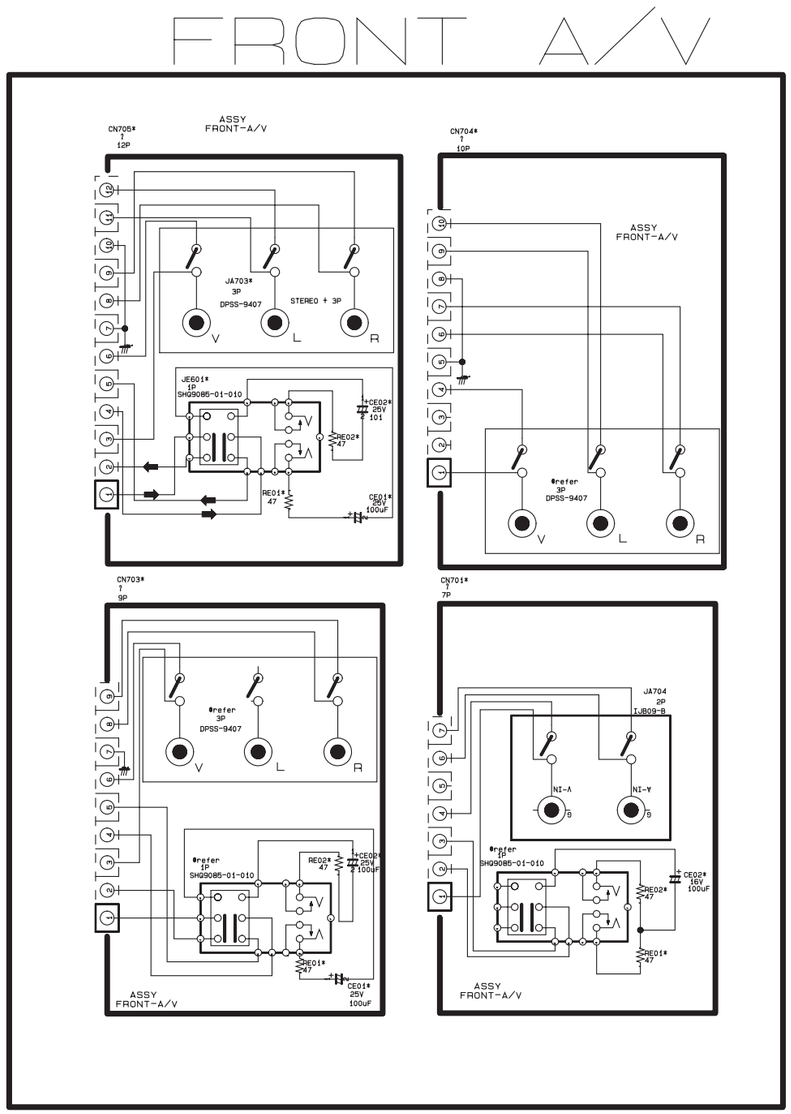

TO/FROM MAIN(1)
BUS
B+
IC-SOUND. AMP
IC601 (ASSY-M/S)TDA7266S
IC602 (ASSY-M/S)TDA7266M
INFORMATION BUS
1. EX-AUDIO-IN : EXTERNAL AUDIO OUT
2. EX-VIDEO-IN : EXTERNAL VIDEO IN
3. EX-AL-IN : EXTERNAL AUDIO LEFT
4. EX-AR-IN : EXTERNAL AUDIO RIGHT
5. INT-AV : JACK IDENT PORT
TP07
TP08
ICS601
ICS602* (TO-220) 78M05
CN603* 4P
CN601* 3P
CN604* 4P
CN704* 12P
CN703* 9P
CN701* 7P
JA701 WJB-03-08C 3P
EX-AL-IN
EX-AR-IN
L-OUT
R-OUT
A-13V
MUTE
POWER
AUDIO-OUT
COMPOSITE SIGNAL INPUT
MTS
digital ground for iic bus
EX-AUDIO-IN
EX-VIDEO-IN
IIC-SDA
IIC-SCL
JACK INSERT=>8V
JACK NON INSERT=>0.5V
EXT L INPUT
EXT L OUTPUT
EXT R INPUT
EXT R OUTPUT
CONNECT ASSY-FRONT-A/V
EXT V INPUT
L+OUTPUT
L+INPUT
EXT OUTPUT
R+ OUTPUT
R+ INPUT
: Power Line
: Signal Line


TP07


TP08

10-4 MAIN (4/4)


CRT
BUS
B+
IC501
(ASSY-H/S)
R/G/B DRIVE-IC
TDA6107Q
V1
V2
V3
GND
VDD
PROBE1
PROBE2
PROBE3
GK
RK
BK
R510 100
R512 100
R511 100
C501 50V 104 100
R501H* 1/2W(RC) 1.8K-K
R502H* 1/2W(RC) 1.8K-K
R502 1/2W(RC) 1.8K-K
FBT SCREEN WIRE(RED)
FBT ANODE FOCUS WIRE
FBT ANODE CAP WIRE
FBT H.V
G3(FOCUS)
G1(GND)
RK
GK
BK
HEATER(-)
HEATER(+)
G2(SCREEN)
*refer A51KQJ63X(H)
GND
C503 4KV 472
CN501 9P
R-OUT
G-OUT
B-OUT
CUT-OFF
HEATER
B-180v
R
G
B
GND
CUT OFF
HEAT
180V
R507
R508
R509
DZ502 9.1V MTZJ9.1B
DZ503 9.1V MTZJ9.1B
DZ501 9.1V MTZJ9.1B
C505 50V 681
V0998 CHE-A8P7004HS
G3(FOCUS)
GND
NC
G1(GND)
BK
G2(SCREEN)
BK
HEATER(-)
HEATER(+)
BK
TO TBC-WIRE
ST501 (AUTO) 1P
TO MAIN TUNER GND
CRT-SOCKET
R502H 1/2W(RC) 1.8K-K
R502M* 1/2W(RC) 1.8K-K
R505* 1/2W(BF) 1(AF)
DSS01-045V1
DSS01-045V1
DSS01-045V1
DSS01-045V1
R504 1/2W 10M
C504 250V 4.7uF
C506 250V 10uF
C502 250V(P) 224
D601 600V RGP10J


FRONT A/V
ASSY FRONT-A/V
CN705* 1 12P
CN704* 1 10P
JA703* 3P DPSS-9407
STEREO + 3P
V
L
R
JE601* 1P SHG9085-01-010
CE02 25V 101
RE02* 47
RE01* 47
CE01* 25V 100uF
*refer 3P DPSS-9407
CN703* 1 9P
CN701* 1 7P
JA704 3P IJB09-B
NI-A
NI-Y
*refer 1P SHG9085-01-010
CE02* 16V 100uF
RE01* 47
CE01* 25V 100uF
ASSY FRONT-A/V